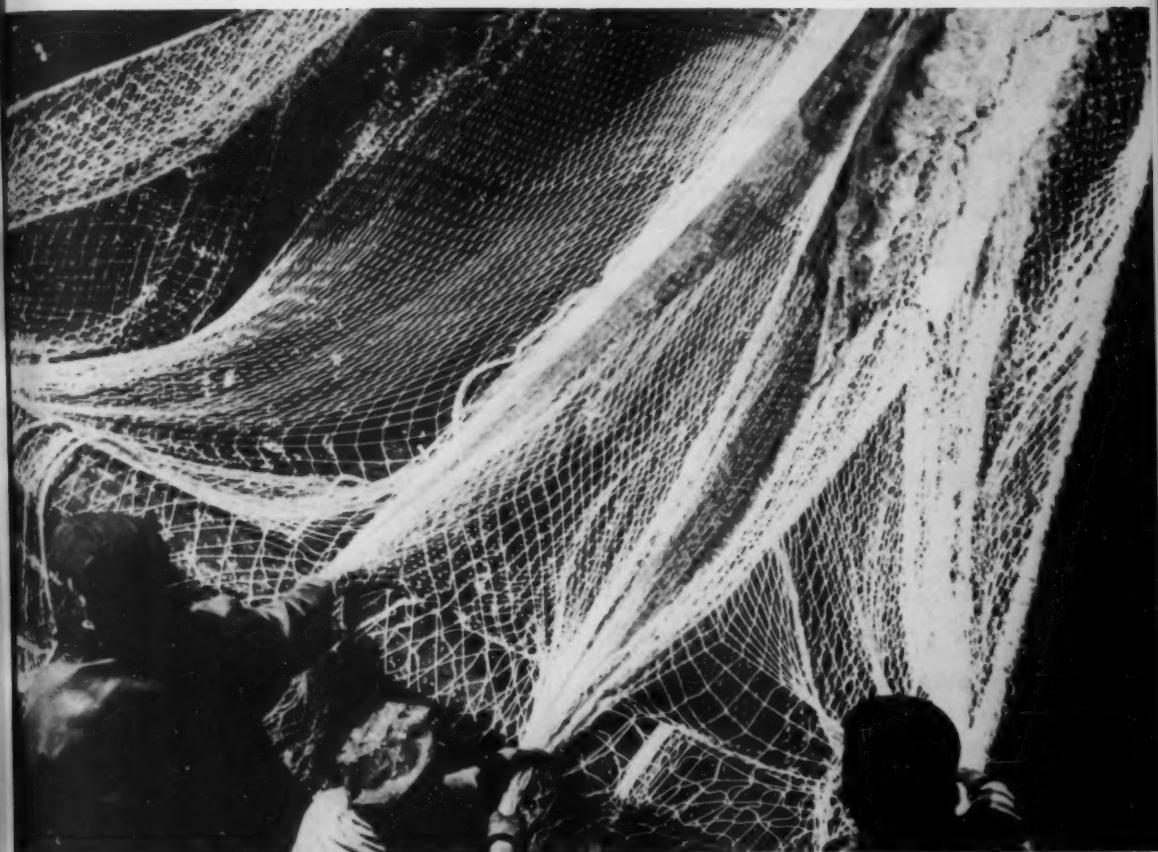


Div. of Fishes

Mus.

COMMERCIAL FISHERIES REVIEW

MUSEUMS
LIBRARY



Vol. 24, No. 1

JANUARY 1962

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.

D
UNITED
D

F
R
R
E

DEPOSITED BY THE
UNITED STATES OF AMERICA
UNITED STATES
DEPARTMENT OF THE INTERIOR
STEWART L. UDALL, SECRETARY
FISH AND WILDLIFE SERVICE
CLARENCE F. PAUTZKE, COMMISSIONER

BUREAU OF COMMERCIAL FISHERIES
DONALD L. MCKERNAN, DIRECTOR
DIVISION OF RESOURCE DEVELOPMENT
RALPH C. BAKER, CHIEF



COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

Publication of material from sources outside the Bureau is not an endorsement. The Bureau is not responsible for the accuracy of facts, views, or opinions contained in material from outside sources.

Although the contents of the publication have not been copyrighted and may be reprinted freely, reference to the source is appreciated.

Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, May 10, 1960.

5/31/63

CONTENTS

COVER: An experimental 85-foot nylon midwater trawl net being hauled aboard the U. S. Bureau of Commercial Fisheries research vessel Delaware. Small catches of haddock, butterfish, herring, whiting, and dogfish were made on the 9-day fish-scouting cruise over broad areas of the Gulf of Maine, Georges Bank, and adjacent waters.

Page	
1	Exploratory Fishing off the Coast of North Carolina, September 1959-July 1960, by Robert Cummins, Jr., Joaquin B. Rivers, and Paul J. Struhsaker
10	Soft-Crab Industry, by Charles F. Lee and F. Bruce Sanford

Page	
13	TRENDS AND DEVELOPMENTS: North Pacific Fishery Research Vessels, by Ralph P. Silliman California;
14	Shrimp Landings in 1961 Exceeded 2 Million Pounds
14	Midwater Trawling for Salmon Fingerlings Continued
15	Rockfish Tagging Cruise in Monterey-San Simeon Inshore Waters
15	Cans--Shipments for Fishery Products, Jan- uary-September 1961 Films;
16	Two Historic Fishery Areas to be Subjects of New Films Gear:
16	Device for Recording Net Depth Great Lakes:
16	Joint Efforts to Bring Back Lake Trout to Upper Great Lakes Great Lakes Fisheries Exploration and Gear Research:
17	Exploratory Fishing Vessel <u>Kaho</u> Completed Great Lakes Fishery Investigations:
17	Lake Erie Studies to Determine Length and Age of Fish at End of Growing Season, Oc- tober 1961
18	Lake Michigan Fish Population Survey Con- tinued
19	Fall Distribution of Fish in Lake Superior Studied
19	Lake Trout Spawning Populations Assessed in Apostle Islands Area of Lake Superior
20	TRENDS AND DEVELOPMENTS (Contd.): Gulf Exploratory Fishery Program: Underwater Observations of Shrimp Trawls in Action Continued
20	Gulf Fishery Investigations: Shrimp Distribution Studies Hawaii:
21	Skipjack Tuna Landings, January-October 1961 Industrial Products:
21	U. S. Fish Meal, Oil, and Solubles Produc- tion, January-October 1961
22	U. S. Fish Meal and Solubles Production and Imports, January-September 1961
22	Major Indicators for U. S. Fish Meal, Solu- bles, and Oil, November 15, 1961 Maine Sardines:
22	Maine Legislature Extends Sardine Canning Season
23	Canned Stocks, November 1, 1961 North Atlantic Fisheries Exploration and Gear Research:
24	Commercial Concentrations of Herring Sought off New England Coast North Atlantic Fisheries Investigations:
25	Sea Scallop Spawning Checked off Massachu- setts
25	North Atlantic Groundfish Survey Completed
25	Nutrition: Cardiologist Recommends Change in Army Diet Salmon:
27	Outlook for Bristol Bay Red Salmon Run in 1962 is Poor

Contents continued page II.

CONTENTS (CONTINUED)

Page		Page	
TRENDS AND DEVELOPMENTS (Contd.):		FOREIGN (Contd.):	
Salmon (Contd.):		Canada (Contd.):	
27 ..	New Method of Marking Fingerlings	45 ..	British Columbia Herring Fleet Price Agreement
28 ..	Returns High at Oregon State Hatcheries in Fall of 1961	46 ..	British Columbia Dogfish Liver Subsidy Terminated November 6, 1961
Shellfish:		46 ..	British Columbia Whaling Industry to Resume in April 1962
28 ..	Two Sanitation Centers to be Built	46 ..	New Brunswick Fish Meal Prices, October 1961
Shrimp:		46 ..	Fishermen's Cooperative Associations Chile:
29 ..	United States Shrimp Supply Indicators as of December 1, 1961	47 ..	South African Companies Move into Chilean Fishing Industry
29 ..	Central Alaska Catches Outstanding	47 ..	United States Firm Investing in Chile's Fishing Industry Denmark:
29 ..	South Atlantic Exploratory Fishery Program: Exploratory Fishing for Shrimp, Scallops, and Snappers in South Atlantic	48 ..	Fish Fillets and Blocks and Fishery Byproducts Exports, January-September 1961 Fiji Islands:
Tuna:		48 ..	Japanese Tuna Base Planned German Federal Republic:
31 ..	United States and Territories Canned Pack at Record High	48 ..	New Fish Reduction Method Tested Successfully
31 ..	Yellowfin Landings from Eastern Pacific	49 ..	Fish Meal Prices, November 3, 1961
31 ..	New Cannery at Cambridge, Md.	49 ..	Fish Oil Supplies are Liberal
32 ..	United States Commercial Fishery Landings, January-September 1961	50 ..	Fish Body Oil Market
U. S. Fishery Landings:		50 ..	Foreign Trade in Fish Body Oils, January-July 1961 Iceland:
32 ..	Near-Record Commercial Catch is Indicated for 1961	51 ..	Fishery Trends as of November 1961
U. S. Fishing Vessels:		52 ..	Fish Production, January-July 1961 Iran:
33 ..	Documentations Issued and Cancelled, September 1961	52 ..	Imports of Most Fishery Products Prohibited Israel:
U. S. Foreign Trade:		52 ..	Three New Deep-Sea Trawlers Planned Ivory Coast:
34 ..	Edible Fishery Products, September 1961	52 ..	U. S. Company Invests in Fish Plant Japan:
34 ..	Imports and Exports of Selected Fishery Products, January-September 1961	52 ..	Fishery Agency Undertakes Tuna Production and Marketing Studies
35 ..	Imports of Canned Tuna in Brine Under Quota	53 ..	Tuna Industry Proposes Lobby in United States
36 ..	Exports and Re-Exports of Frozen Shrimp to Japan, January-August 1961	53 ..	Producers Association Plans to Increase Frozen Tuna Export Quotas to United States
36 ..	Fishery Import Trends, 1960	53 ..	Frozen Tuna And Swordfish Exports to United States to be Increased
38 ..	U. S. Commercial Attachés to Pursue Export Sales Vigorously	54 ..	Frozen Swordfish Export Quota to United States Increased
Whaling:		54 ..	Tuna Fishing Conditions in Eastern Pacific, October-November 1961
39 ..	U. S. Production of Whales and Products	54 ..	Fishing Firms Hope to Import Frozen Tuna-Like Fish from South Africa
39 ..	Wholesale Prices, November 1961	55 ..	Record Tuna Trip at Yaizu
FOREIGN:		55 ..	Japanese to Explore for New Tuna Resources off Ceylon
International:		55 ..	Freight Rates for Canned Tuna Shipments to United States Boosted 6 Percent
North Pacific Fisheries Commission:		56 ..	Frozen Sablefish Shipped to U. S.
41 ..	Commission Meeting in Japan Reviews International Salmon Research	56 ..	Survey Shows Larger Tuna Vessels Being Constructed
42 ..	Interior Secretary Udall Addressed National Meeting in Tokyo	56 ..	Fish Meal Factoryship Departs for Angola
43 ..	Northwest Pacific Fisheries Commission: Soviet-Japanese Fishery Meeting in Moscow	56 ..	Antarctic Fisheries Resources to be Studied
Food and Agriculture Organization:		57 ..	Fishing Activities in the Bering Sea
43 ..	Council and Conference Meetings	57 ..	Commercial Fish Hatcheries and Fish Farms Malagasy Republic:
Marine Oils:		58 ..	Tuna Canning Developments
44 ..	Estimated World Production, 1956-62	58 ..	Mexico:
Whaling:		59 ..	Shrimp Exports to U. S. Must Meet Minimum Food and Drug Standards
44 ..	No Agreement on Distribution of Antarctic Whale Catch		
44 ..	Norwegian Expeditions off to Antarctic Grounds		
44 ..	Oceanography:		
44 ..	Intergovernmental Oceanographic Commission Adopts Resolution		
Australia:			
45 ..	Australian Firm Offers to Sell Fish Canners to Japanese		
Canada:			
45 ..	British Columbia Herring Fleet Tied-Up in Ex-Vessel Price Dispute		

Contents continued page III.

CONTENTS (CONTINUED)

Page	CONTENTS (CONTINUED)	Page	CONTENTS (CONTINUED)
	FOREIGN (Contd.):		FOREIGN (Contd.):
	Morocco:		United Kingdom (Contd.):
59 ..	Canned Fish Export Trends	64 ..	Fishery Loans Interest Rates Revised
	New Zealand:		FEDERAL ACTIONS:
59 ..	Tuna Industry Planned	65 ..	Department of the Interior:
	Nicaragua:		Contract for Processing Alaska Seal Skins to
59 ..	Shrimp Fishery Trends		be Canceled
	Nigeria:		Department of State:
60 ..	Japanese-Nigerian Joint Fishery Enterprise		Agency for International Development:
	at Lagos.	65 ..	New Guarantees for U. S. Private Enter-
	Norway:		prise Overseas
60 ..	Norway-Soviet Talks on Norwegian Fishing	66 ..	Eighty-Seventh Congress (First Session)
	Limits End	68 ..	FISHERY INDICATORS:
60 ..	Frozen Fish Exports Increase	69 ..	Chart 1 - Fishery Landings for Selected States
	Portugal:	70 ..	Chart 2 - Landings for Selected Fisheries
61 ..	Canned Fish Exports, January-June 1961	70 ..	Chart 3 - Cold-Storage Holdings and Freezings
61 ..	Canned Fish Pack, January-June 1961	71 ..	Chart 4 - Receipts and Cold-Storage Holdings
	South Africa Republic:		of Fishery Products at Principal Distribu-
61 ..	Fish Meal Market Trends, October 1961	71 ..	tion Centers
	Taiwan:	71 ..	Chart 5 - Fish Meal and Oil Production - U.S.
62 ..	Japanese to Construct Two Tuna Long-Liners		and Alaska
	U. S. S. R.:	72 ..	Chart 6 - Canned Packs of Selected Fishery
62 ..	Fishing Activity on Georges Bank		Products
62 ..	Emphasis is on Large Vessels for Fishing	73 ..	Chart 7 - U. S. Fishery Products Imports
63 ..	Automation for Factory-Trawlers		RECENT FISHERY PUBLICATIONS:
63 ..	New Breed of Salmon Developed	74 ..	Fish and Wildlife Service Publications
	United Kingdom:	75 ..	Miscellaneous Publications
63 ..	Report of Fisheries Study Group		



SALMON REHABILITATION BY INDIANS

The name "Auke" means "little lake" in the Tlingit Indian language and refers to the lake that was in front of the glacier and which is now "Auke Lake" in Alaska.

It is related that in recent prehistoric times the local rising land mass created a barrier to salmon in the Auke Lake outlet and the Indians of the nearby Auke village set their slaves to work clearing the stream. The success of this salmon rehabilitation was so pleasing to the Indians that they sent the slaves back to their own villages. (Outdoor California, May 1961.)

Editorial Assistant--Ruth V. Keefe

Compositors--Jean Zalevsky, Alma Greene, and Helen Paretti

* * * * *

Photograph Credits: Page by page, the following list gives the source or photographer for each photograph in this issue. Photographs on pages not mentioned were obtained from the Service's file and the photographers are unknown.

P. 33--J. Pileggi; p. 62--Robert K. Brigham.

OE A APR 58

Jo

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.
Price 60 cents (single copy). Subscription Price: \$5.50 a year; \$2 additional for foreign mailing.

COMMERCIAL FISHERIES REVIEW

January 1962

Washington 25, D. C.

Vol. 24, No. 1

EXPLORATORY FISHING OFF THE COAST OF NORTH CAROLINA, SEPTEMBER 1959-JULY 1960

By Robert Cummins, Jr.,* Joaquim B. Rivers,* and Paul J. Struhsaker*

ABSTRACT

Exploratory fishing with the U. S. Bureau of Commercial Fisheries chartered trawler Silver Bay was conducted at 435 stations along the continental shelf and slope off North Carolina during 5 cruises in 1959-60. Fishing gear used consisted of clam and scallop dredges, roller-rigged fish trawls, industrial-fish trawls, and shrimp trawls. The region investigated was found to be generally suitable for bottom trawling, with sand, sand and shell, and sand and mud bottoms predominating. Commercial concentrations of hard clams (*Mercenaria* sp.) were found near Bogue Inlet, and calico scallops (*Pecten gibbus*) in commercial concentration were found off Core Banks. Despite widespread exploratory coverage of the region with trawls, no large concentrations of commercial shrimp were found outside existing fishing grounds, nor were large catches of bottom fish made with any consistency. The presence within the region of commercially-important concentrations of pelagic fish (anchovies and herring-like species) was indicated by the occurrence of these fish in some of the bottom-trawl catches.

INTRODUCTION

In 1959, the U. S. Bureau of Commercial Fisheries established the South Atlantic Exploratory Fishing and Gear Research Station in Brunswick, Ga., with the primary objective of determining the fishery potential of the continental shelf and slope from Cape Hatteras, N. C., to Cape Canaveral, Fla. The 96.4-foot North Atlantic trawler Silver Bay, which had previously served the Bureau in the Gulf of Mexico (Captiva and Rivers 1960) and off the east coast of Florida (Bullis and Rathjen 1959), was rechartered for use by the Brunswick station.

Investigations in the region prior to 1959 had taken place largely in winter or spring and had been conducted almost entirely with either New England fish trawls (Powell 1950) or shrimp trawls. Results had not been encouraging. A brief resume of the explorations that took place in the region between 1940 and 1958, and of their results, is given by Bullis and Rathjen (1959). More extensive exploratory work, utilizing a wider variety of gear and extending coverage throughout the year, was needed to obtain practical data on the distribution and availability of the resources in the region for use by commercial fishermen.

During the first year of operations, therefore, the Silver Bay was used in a general survey of the resources of the entire region with several types of trawling and dredging gear. Cruises were made off North and South Carolina, Georgia, and Florida between 5 and 100 fathoms. Five of these cruises, conducted off the coast of North Carolina, provide the basis for this report.

REGION COVERED

The region investigated (fig. 1) lies on the continental shelf adjacent to the North Carolina coast from Cape Hatteras south. The coastline forming the shoreward edge of the region is bounded on the north by Cape Hatteras and on the south by Cape Canaveral. The region is bounded on the west by the continental shelf and on the east by the continental slope.

*Fishery Methods and Equipment Specialists, South Atlantic Exploratory Fishing and Gear Research Station, U. S. Bureau of Commercial Fisheries, Brunswick, Ga.

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
SEP. NO. 636

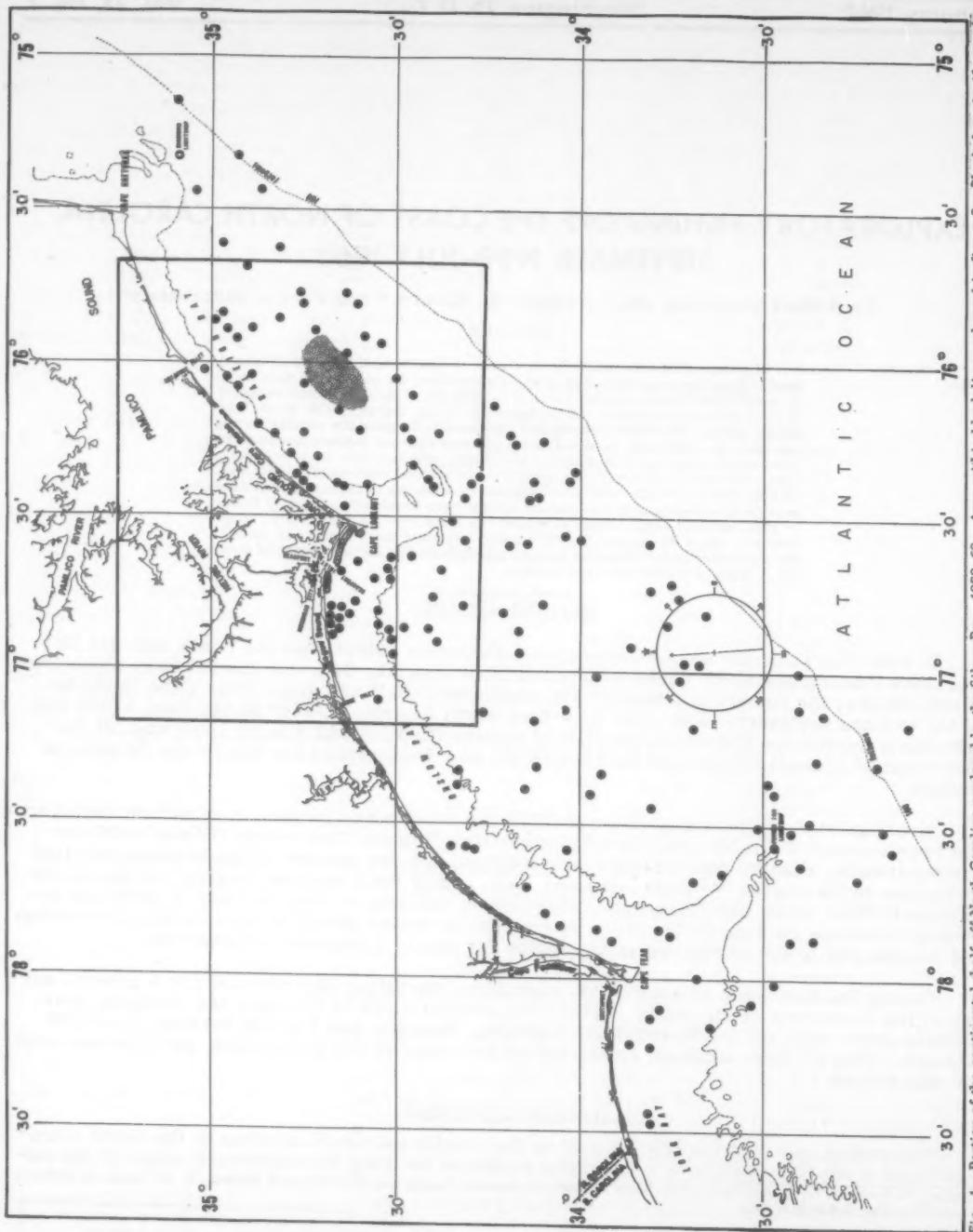


Fig. 1 - Portion of the continental shelf off North Carolina explored by the Silver Bay, 1959-60. Area within black lines enlarged in figure 2. Black dots signify trawl drags; stippled area, scallop bed; open circles, clam bed.

gion extends in a southwesterly direction from Cape Hatteras and is divided into two large bays, Raleigh and Onslow, by projections formed by Capes Hatteras, Lookout, and Fear. Each of the projections is accompanied by an extensive shoal--Hatteras by Diamond Shoals, Lookout by Lookout Shoals, and Fear by Frying Pan Shoals. Between the bays and the mainland proper lie the outer banks and an extensive series of sounds, the larger of which are Pamlico, Core, and Bogue. Oregon Inlet allows vessels to enter Pamlico Sound and its fishing ports; Beaufort Inlet provides a pass through the banks to the deep-water ports of Beaufort and Morehead City; and the Cape Fear River, emptying at Cape Fear, provides entrance to Southport and Wilmington. A small portion of a third large bay--Long Bay--is included in the region covered between Cape Fear and Little River Inlet.

The seaward edge of the region is formed by the 100-fathom curve which lies about 26 miles due east of the Cape Hatteras Light on the north end (at $35^{\circ}15' N.$, $75^{\circ}00' W.$), and extends from there in a somewhat more southerly direction than the mainland so that, at the southern end of the region, it is nearly 80 miles offshore on a line projected from the North Carolina-South Carolina boundary (at $33^{\circ}03' N.$, $77^{\circ}35' W.$). The region thus encloses more than 8,000 square miles of potential fishing grounds varying in bottom type, but predominantly sand, sand and shell, or sand and mud. Gravel and coral bottoms are encountered occasionally, but with care and proper choice of gear, gear damage can be held to a minimum.

The region constitutes a transition zone between the colder water regions to the north and the tropic-subtropic regions to the south and contains animal groups common to both. It should, therefore, be expected to contain more species, though not necessarily more individuals, than the adjoining regions to either side, a factor that influenced the choice of a wide range of gear for the investigations.

EXPLORATORY GEAR AND PROCEDURES

Because primary emphasis was on obtaining maximum year-round coverage of the entire region, fishing operations were carried out from the Silver Bay round the clock, in all weather conditions encountered, and on all bottom types.

Gear used consisted of (a) 14-tooth Fall River clam dredges, described by Tiller, Glude, and Stringer (1952); (b) 8-foot modified Georges Bank scallop dredges similar to those described by Posgay (1957); (c) roller-rigged fish trawls described by Knake (1956) and Captiva and Rivers (1960) and constructed of nylon; (d) 2-seam industrial-fish trawls described by Bullis, Captiva, and Knake (1960) and constructed of both nylon and cotton; and (e) shrimp trawls similar to those described by Bullis (1951). The bags of the clam and scallop dredges were constructed with 2-inch rings. Nylon liners of $1\frac{1}{2}$ -inch-mesh webbing were generally used in the scallop dredges.

Some modification of the 14-tooth clam dredges was necessary (Captiva 1960) because the Silver Bay could not be slowed to the dragging speed found to be optimal for operation of that gear in its original condition.

Where preliminary explorations indicated commercial concentration of a resource, additional drags were made for confirmation and, where warranted, simulated commercial dragging operations were carried out as time was available.

RESULTS OF EXPLORATORY FISHING

Most of the region surveyed is suitable for bottom trawling if rollers and chafing gear are used judiciously and depth-recorder tracings are watched. Gear damage during the explorations was minor. In all, 435 stations were fished.^{1/}

HARD CLAMS: Hard clams (*Mercenaria* sp.) were found in greatest abundance between Cape Lookout and a point about 4 miles west of Beaufort Inlet in depths of $3\frac{1}{2}$ to $7\frac{1}{2}$ fathoms (fig. 2). Following initial explorations in that general area, a series of 12 drags was made

^{1/}Including 10 night-light dip-net stations not considered further.

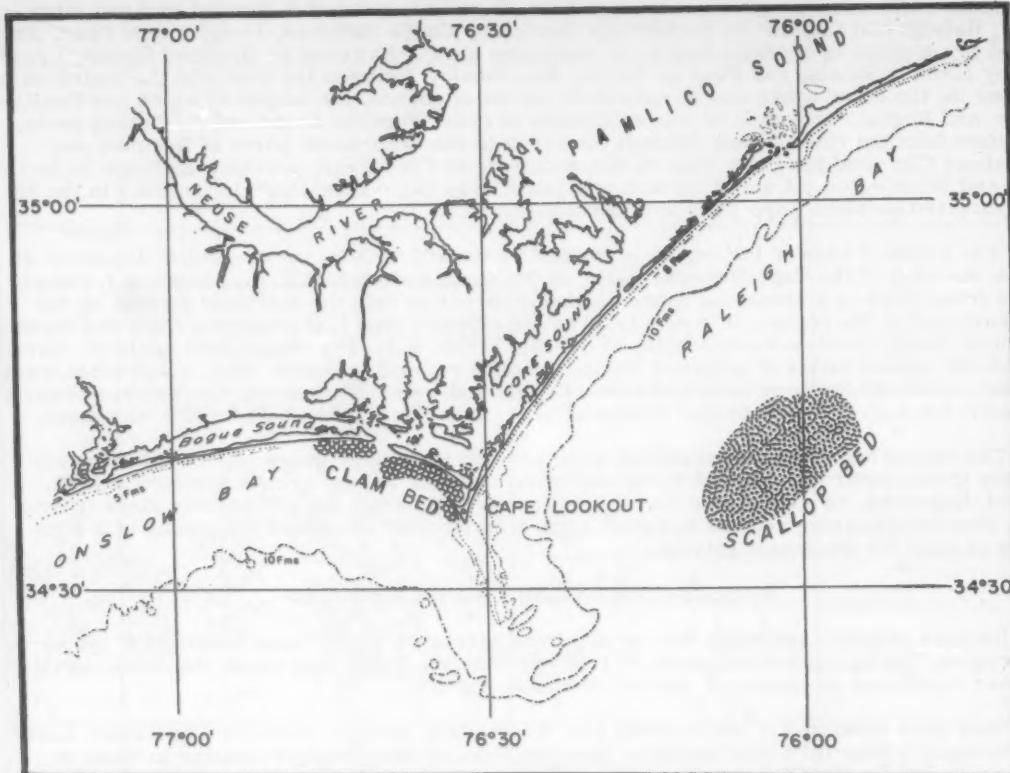


Fig. 2 - Enlarged section of region shown in figure 1, to better illustrate approximate location of clam and scallop concentrations outlined by work of the Silver Bay.

off Beaufort Inlet (at or near $34^{\circ}39.7' N.$, $76^{\circ}38.3' W.$) in November 1959, to stimulate commercial operations. Results are shown in table 1. An over-all catch rate of $7\frac{1}{2}$ bushels of live clams per hour fished was obtained, with a maximum catch rate of 13 bushels per hour. The catches consisted primarily of chowder-size clams, 3 to 5 inches in length, averaging 1 gallon of meats per 90-pound bushel of stock. This yield is lower than those cited for ocean quahogs (*Arcisiz* and *Sandholzer* 1947) and for hard clams in other areas--probably because of the extremely thick shells possessed by the North Carolina clams. A catch ratio of 1 live clam to 1 dead clam (2 half-shells) was obtained in the area. Some evidence of seasonal fluctuation in quantity of clams available is indicated by results of follow-up work done in the same area in February and March 1960, when the maximum catch rate was only 5 bushels of live clams per hour, but more extensive dragging must be done before the apparent trend can be proved or disproved. The Cape Lookout-Beaufort Inlet

Table 1 - Results of Simulated Commercial Fishing for Hard Clams with a Single Dredge Near Beaufort Inlet, N. C., November 29, 1960

Station Number	Minutes Fished	Depth (Fathoms)	Catch	
			Lbs. 1/	Whole Clams Bushels (90 Lbs.)
1434	35	6	700	$2\frac{1}{2}$
1435	35	$5\frac{1}{2}$	700	$2\frac{1}{2}$
1436	34	6	900	4
1437	33	$6\frac{1}{2}$	850	$3\frac{1}{2}$
1438	34	$5\frac{1}{2}$	875	3
1439	30	$5\frac{1}{2}$	40	(18 individuals)
1440	27	$3\frac{1}{2}$	725	3
1441	30	5	1,000	4
1442	30	$6\frac{1}{2}$	1,200	$9\frac{1}{2}$
1443	30	5	1,100	6
1444	30	5	1,200	6
1445	40	5	1,200	$6\frac{1}{2}$
Totals	388	-	10,490	$46\frac{1}{2}$

1/Estimated weight. Includes dead shell.

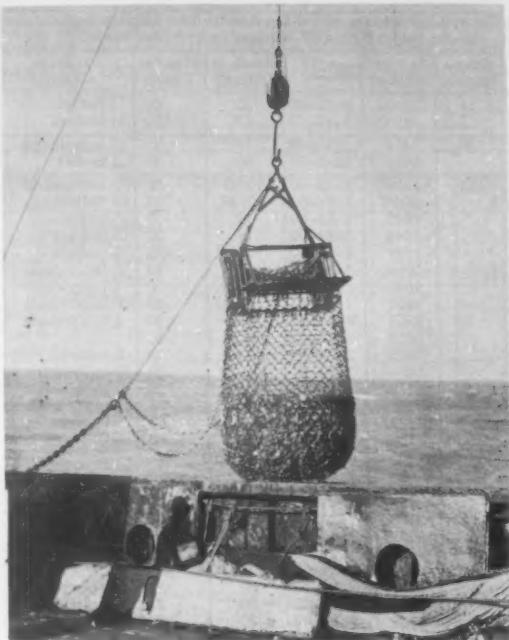


Fig. 3 - A 14-tooth Fall River clam dredge coming aboard the Silver Bay with approximately 4 bushels of hard clams.

clam grounds are near shore and adjacent to a fishing port containing vessels that could be easily converted to clam dredging. In addition, an established clam-processing plant is available near the grounds.



Fig. 4 - A 14-tooth Fall River clam dredge coming aboard the Silver Bay with approximately 6 bushels of hard clams.

2/ "Actual fishing time" is defined as the time the gear is actually on the bottom and in fishing position--"from dog-off to haul back."

Small numbers of clams (up to 24 individuals per drag) were taken near Bogue Inlet and near the mouth of the Cape Fear River, and numerous dead shell but no live clams were taken in the vicinity of Drum Inlet. In all 125 stations were fished with Fall River dredges in 49 hours of actual fishing time². Mud was by far the most productive bottom type dredged for clams. Accounts of established fisheries for hard clams include those by Arcisz and Sandholzer (1947) and Tiller, Glude, and Stringer (1952).



Fig. 5 - Unloading a catch of 45 bushels of hard clams after 6 hours fishing with a single dredge in the Beaufort Inlet area. Bed was discovered by the Silver Bay in November 1959.

CALICO SCALLOPS: The largest concentration of commercial-size calico scallops (*Pecten gibbus*) fished in the course of the explorations was found southeast of Core

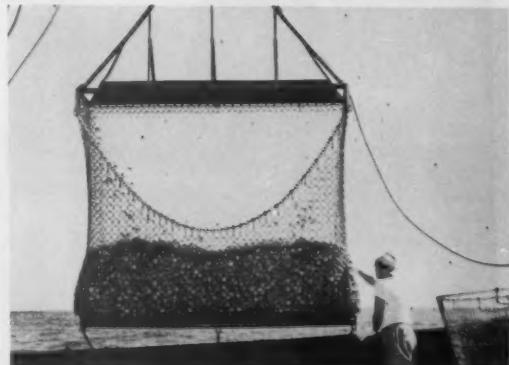


Fig. 6 - A 10-foot Georges Bank-type scallop dredge coming aboard the Silver Bay with approximately 40 bushels of calico scallops.

Banks (fig. 2). This concentration, centered at $34^{\circ}32' N.$, $76^{\circ}00' W.$, about 10 miles in length, and lying in the 17- to 20-fathom interval, was first noticed in September 1959, during exploratory shrimp trawling operations. Follow-up work with dredges in December resulted in maximum catches of only 3 bushels per 30-minute drag, but in February catch rates rose to a maximum of 16 bushels per 30-minute drag and in July to 19 bushels (table 2). The scallops taken were mostly large--from $2\frac{1}{2}$ to 3 inches in shell diameter--but in contrast with large scallops on the Cape Canaveral bed (Bullis and Cummins 1961), the meats of the large Core Banks scallops were of uniformly high quality, firm, white, and palatable. Yields varied from an average of 5 pints per 75-pound bushel in September (trawl-caught scallops) to $3\frac{1}{2}$ pints per bushel in December, $3\frac{1}{2}$ -4 pints per bushel in February, and $2\frac{1}{2}$ -3 pints per bushel in July. Whether or not the variations in availability and yield represent seasonal fluctuations cannot be determined on the basis of work accomplished to date. Despite the variations, however, scattered areas containing commercial significant amounts of scallops (yielding 5 or more bushels of scallops per



Fig. 7 - A roller-rigged nylon fish trawl coming aboard the Silver Bay with approximately 2,000 pounds of industrial fish.

Table 2 - Summary of Fishing Results from Scallop Explorations by the Silver Bay at 37 Stations East of Core Banks, N. C.

Cruise Number	Station Number	Date	Depth in Fathoms	Minutes Fished	Scallop Catch ¹ /
18	12702/	9-12-59	20	60	1 bushel-
	12732/	9-12-59	17	120	34 bushels
20	1496	12-8-59	16	34	15 individuals
	1497	12-8-59	20	30	1 bushel
22	16292/	2-22-60	18/17	60	75 individuals
	1644	2-24-60	20/19	30	35 individuals
	1645	2-24-60	19	30	15 bushels
	1646	2-24-60	19	30	10 bushels
	1647	2-24-60	19	35	5 bushels
	1648	2-24-60	19	30	12 individuals
	1649	2-24-60	16	30	1 individual
	1650	2-24-60	16	30	6 individuals
	1651	2-24-60	16	30	3 individuals
	1652	2-24-60	21/20	30	-
	1653	2-24-60	18	30	6 bushels
	1654/	2-24-60	21/20	60	60 individuals
	21702/	7-18-60	52/42	40	10 individuals
	21822/	7-20-60	52/42	45	37 individuals
25	21832/	7-20-60	19/18	60	5 bushels
	2194	7-23-60	19	30	1 bushel
	2195	7-23-60	19	30	1 bushel
	2196	7-23-60	19	30	5 bushels
	2197	7-23-60	19	30	2 bushels
	2198	7-23-60	25	15	35 individuals
	2199	7-23-60	30	15	15 individuals
	2200	7-23-60	51/55	30	45 individuals
	2202	7-24-60	20	30	-
	2203	7-24-60	20	30	2 bushels
	2204	7-24-60	20	30	15 bushels
	2205	7-24-60	20	30	51/2 bushels
	2206	7-24-60	20	30	-
	2207	7-24-60	18	30	50 individuals
	2208	7-24-60	18	30	10 individuals
	2209	7-24-60	20	45	19 bushels
	2210	7-24-60	18/17	30	4 individuals
	2211	7-24-60	15	30	-
	2212	7-24-60	12/14	30	-
Totals		37		1,339	95 bu. (approx.)

¹One bushel equals approximately 75 pounds.

²Drags made with shrimp trawls. All others made with modified Georges Bank scallop dredges.

1-hour drag with an 8-foot dredge) can be found on the bed over much of the year. The Core Banks scallop bed resembles the Cape Lookout-Beaufort Inlet clam bed in being near shore, near a fishing port with available vessels, and near a processing plant.

Dredging in other portions of Onslow Bay failed to produce scallops, although occasional individuals were taken in shrimp trawls in November 1959 in the Bay. In all, 53 stations were fished with scallop dredges in 26 hours of actual fishing time. Scallops were found in greatest abundance on bottoms consisting of a mixture of sand and shell.

SHRIMP AND FISH: Despite widespread coverage of the assigned region with shrimp trawls, large-mesh New England fish trawls, 2-seam industrial fish trawls, and scallop dredges (fig. 1), no large concentrations of commercial shrimp were found outside already-known grounds, and the occasional

large catches of fish that were made were interspersed with many smaller catches. A summary of the results of the 270 actual hours of fishing time spent at 247 trawl stations shows that total catches (the sum of fish, shrimp, and trash) were the highest in the portion of the 0- to 10-fathom depth interval investigated (table 3).

Table 3 - Summary of Trawl Explorations and Results, M/V Silver Bay, North Carolina, 1959-60

Depth Interval, Effort, & Catch ¹	Cruise No. and Time of Year					
	No. 18 Sept.	No. 19 Oct.	No. 20 Nov./Dec.	No. 22 Feb./Mar.	No. 25 July	Totals All Cruises
<u>0-10 Fathoms</u>						
No. of Stations	43	7	8	14	24	96
Actual Fishing Time (hours)	50.28	7.63	9.17	14.00	24.46	105.54
Catch Rate ²	397.07	141.67	836.96	14.0	274.52	354.33
<u>11-20 Fathoms</u>						
No. of Stations	41	3	15	22	9	90
Actual Fishing Time (hours)	44.98	3.33	17.66	22.0	8.86	96.83
Catch Rate ²	185.07	18.18	714.43	119.18	942.43	251.98
<u>21-30 Fathoms</u>						
No. of Stations	12	1	6	4	8	31
Actual Fishing Time (hours)	12.78	2.00	7.0	4.0	8.41	34.19
Catch Rate ²	212.51	50.0	294.57	24.82	118.07	198.12
<u>31-40 Fathoms</u>						
No. of Stations	2	-	-	3	1	6
Actual Fishing Time (hours)	2.28	-	-	3.0	1.0	6.28
Catch Rate ²	24.12	-	-	154.00	29.00	86.94
<u>41-50 Fathoms</u>						
No. of Stations	2	-	1	-	1	4
Actual Fishing Time (hours)	1.38	-	1.0	-	0.66	3.04
Catch Rate ²	-	-	35.00	-	41.66	19.73
<u>Over 50 Fathoms</u>						
No. of Stations	10	-	1	.6	3	20
Actual Fishing Time (hours)	9.16	-	1.5	9.50	4.58	24.74
Catch Rate ²	324.78	-	20.0	54.73	44.97	151.66
<u>Totals</u>						
No. of Stations	110	11	31	49	46	247
Actual Fishing Time (hours)	120.86	12.96	36.33	52.50	47.97	270.62
Catch Rate ²	281.49	129.08	617.01	124.89	183.51	271.55

¹/Includes all but scallops, clams, sponge, algae, and inert material.

²/Pounds per hour (average).

SHRIMP: Exploratory catches along the North Carolina coast suggest that sizable concentrations of brown, pink, and white shrimp are infrequent or absent outside the limits of already-known commercial shrimp grounds, at least during the months in which explorations were conducted with the Silver Bay. In September 1959, occasional catches were obtained between Beaufort and Bogue Inlets in 5 to 8 fathoms that contained from 5 to 35 pounds of brown shrimp (Penaeus aztecus) measuring 21-25 count (heads off); and in July 1960, 1 additional catch in the same area was made that contained 40 pounds of mixed pink (Penaeus duorarum) and brown shrimp measuring 26-30 count (heads off). These catches, however, were interspersed with many others that were less productive or totally non-productive for shrimp. In other areas and other months only scattered individual brown, pink, and white shrimp were taken. Small numbers of rock shrimp (Sicyonia sp.) were found in many of the catches from portions of the region shallower than 25 fathoms.

FISH: Exploratory results indicate that only small-to-medium catches of fish can be expected with any degree of consistency in the region investigated over any prolonged



Fig. 8 - A roller-rigged nylon fish trawl coming aboard the Silver Bay with approximately 3,000 pounds of industrial fish.

period. Interspersed among the smaller catches resulting from drags made by the Silver Bay, however, were a few that ranged as high as 3,000 pounds per hour. These larger catches consisted primarily of small Atlantic croaker (Micropogon undulatus), spot (Leiostomus xanthurus), and butterfish (Poronotus triacanthus), usable only for industrial purposes. Outside of established fishing grounds, the largest catches were made in 5-12 fathoms in September, 12 to 14 fathoms in December, 17 to 100 fathoms in February and March, and 16 to 22 fathoms in July.

A few marketable food fish were taken--mostly flounders--but the proportion of these fish to those utilizable for industrial processing was low^{3/}. Sport fish were also noted on occasions, either as they appeared on the surface and were viewed from the vessel or as they were taken on trolling lines for biological study.

The occurrence of large anchovies (Anchoa sp.) and herring-like fish in some of the trawl catches indicates the possibility of an as-yet-unexplored midwater school fish resource that might prove to be of commercial value in the future.

SUMMARY

The continental shelf bordering the North Carolina coast south of Cape Hatteras contains over 8,000 square miles of potential fishing grounds. Preliminary fishery explorations on that portion of the shelf have revealed the following:

BOTTOM CHARACTERISTICS: Most of the shelf region explored is suitable for some type of trawling. Sand, sand and shell, and sand and mud bottoms are the most common.

CLAMS: Commercial concentrations of hard clams were found near Beaufort Inlet in depths of $3\frac{1}{2}$ to $7\frac{1}{2}$ fathoms. Catch rates ranged up to 13 bushels of clams per 1-hour drag and yields ranged to approximately 1 gallon per 90-pound bushel.

SCALLOPS: Commercial concentrations of calico scallops were found off Core Banks in depths of 17 to 20 fathoms. Catches ranged up to 19 bushels per 30-minute drag and yields reached a maximum of 5 pints per 75-pound bushel.

SHRIMP: No large concentrations of brown, pink, or white shrimp were found beyond the range of the present commercial fishery.

FISH: Individual catches of mixed fishes in commercial quantities were made. Such catches were neither consistent nor sustained over long periods of trawling. Quantities of pelagic fish of potential commercial importance were observed on depth-recorder traces, and a few of the fish occurred in bottom-trawl catches. Some sport fish were taken on trolling lines and others were observed in surface waters.

APPENDIX

A detailed fishing log showing geographic position, depth, date, catch components, and related data for each drag is available as an appendix to the reprint of this article. Write for Separate No. 636, which includes "Table 4--Fishing Log:--North Carolina Fisheries Explorations, 1959-60; M/V Silver Bay."

LITERATURE CITED

ARCISZ, W., and SANDHOLZER, L. A.
1947. A Technological Study of the Ocean Quahog Fishery. Commercial Fisheries Review, vol. 9, no. 6 (June), pp. 1-21 (also Separate No. 176).

BULLIS, H. R., Jr.
1951. Gulf of Mexico Shrimp Trawl Designs. U. S. Fish and Wildlife Service, Fishery Leaflet No. 394 (September), 16 pp.

CAPTIVA, F. J., and KNAKE, B. O.
1960. Trawling Gear Designed for Industrial Fish Production. The Fish Boat (1960 Year Book), vol. 5, no. 3, pp. 18-21.

CUMMINS, R. Jr.
1961. An Interim Report on the Cape Canaveral Calico Scallop Bed. Commercial Fisheries Review, vol. 23, no. 10 (also Separate No. 630).

^{3/}Regulations in North Carolina place a limit on the amount of non-food fish that can be brought in and landed by commercial trawlers when the principal objective of the cruise is shrimp or food fish.

LITERATURE CITED (Contd.)

and RATHJEN, W. F.
1959. Shrimp Explorations off the Southeastern Coast of the United States (1956-1958). *Commercial Fisheries Review*, vol. 21, no. 6 (June) pp. 1-20 (also Separate No. 522).

CAPTIVA, F. J.
1960. Equipment Note No. 6 - Chain Bridles and Accumulators Increase Effectiveness of "Fall River" Clam Dredges in Deep Water. *Commercial Fisheries Review*, vol. 22, no. 12 (December), pp. 20-22 (also Separate No. 607).

and RIVERS, J. B.
1960. Development and Use of Otter-Trawling Gear for Red Snapper Fishing in the Gulf of Mexico, June 1957 - May 1959. *Commercial Fisheries Review*, vol. 22, no. 10 (October), pp. 1-14 (also Separate No. 600).

KNAKE, B. O.
1956. Assembly Methods for Otter-Trawl Nets. U. S. Fish and Wildlife Service, Fishery Leaflet No. 437 (December), 29 pp.

POSGAY, J. A.
1957. Sea Scallop Boats and Gear. U. S. Fish and Wildlife Service, Fishery Leaflet No. 442 (August), 11 pp.

POWELL, D. E.
1950. Observations on the Commercial Fishing Potentialities in the Offshore Waters of North Carolina (January-February 1950). *Commercial Fisheries Review*, vol. 12, no. 7 (July), 7 pp. (also Separate No. 255).

TILLER, R. E.; GLUDE, J. B.; and STRINGER, L. D.
1952. Hard-Clam Fishery of the Atlantic Coast. *Commercial Fisheries Review*, vol. 14, no. 10 (October), pp. 1-25 (also Separate No. 323).



PIRANHAS A PROBLEM IN BRAZIL'S INLAND WATERS

The experience an inland fresh-water biologist in Brazil is having with piranhas certainly belongs in the "If You Think You Got Troubles Department."

The biologist reports that for two years Argentina has had a serious problem with piranhas attacking cows at the Parana River Basin. Particularly in the marginal lagoons which abound with piranhas and where the oxen and cows must drink. Argentina is experimenting with timbo powder (with rotenone concentration about 5 percent) to eradicate piranha. The results appear doubtful because of the very high price of the powder and the large number of lagoons.

Within Brazil, particularly the northeastern part, in the dry region named "Nordeste-Poligono das Secas," the fight against piranhas in the dams, rivers and lagoon is a serious problem and the results are uncertain and expensive.

During 1959 15.9 tons of timbo was used to treat 4,073 small pools and 140 dams. Piranhas were found in 1,063 pools and in 21 of the dams.

It was during this operation against piranhas that 6 of the workers were wounded by Serrassalmus (that is the scientific name of several species of piranhas) and 12 other persons were mutilated when taking the piranhas after the water was treated with timbo. One worker almost died from the results of his mutilations. (Outdoor California, May 1961.)

SOFT-CRAB INDUSTRY

By Charles F. Lee* and F. Bruce Sanford**

The soft-crab industry is not numbered among the biggest of the fishing industries of the United States, but as will be shown later, it might well be the most unique. As to value, production of the soft and "peeler" crabs, according to the latest available statistics, amounts to just under two million dozen, worth over a million dollars at the vessel or boat level.

LOCATION

Historically, the Chesapeake Bay States of Maryland and Virginia have been the stronghold of the soft crab. In 1958 those states produced, by count, 90 percent of the catch (table 1). It will be noted, however, that this 90 percent represented only 72 percent of the value of the total catch, with Louisiana's 9-percent share of the production being worth 26 percent of the total value. This apparent sharp difference in value is explained by the fact that the price differential for size is considerable--big jumbo soft crabs may bring two or three times as much per dozen as do the small sizes. And the crabs grow big in the Louisiana bayous!

The rapidly expanding blue crab industry in the Southern states is attracting migrants from the Eastern Shore with the know-how to succeed with soft crabs, and we may well expect increased production of soft crabs in the South in the near future.



Fig. 1 - Crabs that are soon to molt are more retiring than usual. Scraps are the most effective way of taking them, but many are caught by one man in a small boat with a dip net as seen here.



Fig. 2 - Floats such as are shown pulled out on shore are the usual way of holding crabs until the desired soft-shell stage is reached. Typically, the floats are secured in shallow water and are tended from narrow walkways or with a small skiff.

*Chemical Engineer, Fishery Technology Laboratory, Division of Industrial Research, U. S. Bureau of Commercial Fisheries, College Park, Md.
**Chemist, Fishery Technology Laboratory, Division of Industrial Research, U. S. Bureau of Commercial Fisheries, Seattle, Wash.

UNIQUE CHARACTER

The unique character of the industry derives from the fact that the soft crab is just a stage--a very short, transient one--in the life of the blue crab. All crabs molt, but the blue crab seems to be the only species with a behavior pattern that lends itself to exploitation during the soft-shell stage.



Fig. 3 - In this plant, an innovation in handling soft crabs has been tried and has proved effective in reducing losses in the floats. Permanent tanks are built over the water, and a pump aerates and exchanges the water in the holding tanks.

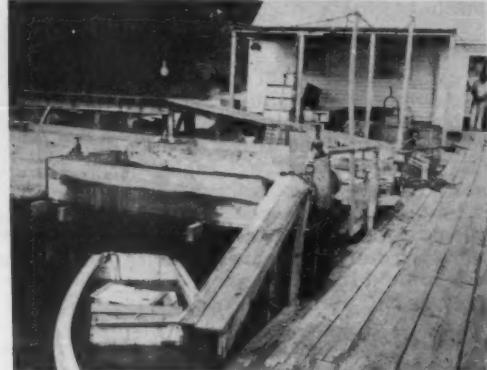


Fig. 4 - Only a small pump is needed to handle the six tanks. The boards protect the pump intake pipe. Note the box midships in the small crab boat moored at the dock. The crabs are held in the box to keep them cool during the run to the plant.

The successful operator of a soft-crab "shedding" plant needs skill that comes only from long experience. He must be able to select at a glance from among a scurrying mass of crabs, the "peelers" or those that are approaching the "buster" stage; that is, those that are starting to emerge from their shells.

Before beginning the molt, blue crabs are known as "green" or "fat" crabs, and show a fine white line on the outer segment of the "backfin." In a few days, this color changes to yellow, then pink. It is at this stage that they are known as "peelers" and are held in separate floats. "Red sign" immediately precedes the "buster" stage, and these crabs must be separated from the peelers to prevent them from being killed during the defenseless pe-



Fig. 5 - Dip nets are used to move the crabs from tank to tank as needed. Water in the tanks is 6 to 8 inches deep, and each tank holds several hundred crabs.



Fig. 6 - The manager is holding crabs in the four stages that the watermen recognize and use to judge the time before molting actually starts. Called "white, yellow, pink, and red," the colors refer to a thin line on the edge of the "backfin" where the shell first splits open.

riod of shedding. Once their shell is gone, they must be removed from the water within an hour, or they begin to toughen and become "buckrams"--too tough to sell as soft crabs and too soft to cook and pick.

Fortunately, removal from the water indefinitely suspends the hardening process, and they can be packed and shipped as soft crabs. Most are shipped as fresh, live crabs, but an increasing number are being frozen, so this gourmet item can now be obtained at inland cities or during the off-season.

The physical condition of the peeler and soft crab is almost as delicate as its flavor, and to hold losses down, the operator of a soft-crab shed-

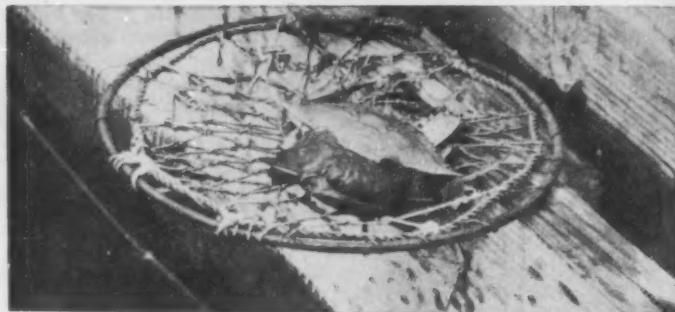


Fig. 7 - In the crab net is a "buster" crab, well on its way of working out of the old shell. This is the last stage before "harvesting."



Fig. 8 - Within an hour after shedding, the soft crabs must be removed from the water and packed. The live crabs are sorted from the middle box. Small ones are on the right, large ones on the left.

ding plant must keep almost a constant day-and-night watch over his floats. But to the born crab man, it's worth the effort. Nothing compares with the flavor of a soft crab, battered and fried just right.

Pictures can tell better than words the story of this unique industry.

Note: The authors gratefully acknowledge the assistance of Messrs. James and Walter Abbott, Northside Crab Company, Weems, Virginia, in the preparation of this report.

Fig. 9 - Crabs are packed carefully, nested in moist seaweed, and covered with special porous paper. If kept cool, they will live for several days when packed in this manner. The major demand is nearby in the big coastal cities, so the crabs reach market in excellent condition.

of a soft crab, battered and fried just right.



DRYING AND SMOKING OF FISH ANCIENT PROCESSES

"The drying and smoking of fish are ancient processes. Archaeologists and anthropologists tell us that drying and smoking were probably developed shortly after the discovery of fire and before man learned to make pictographs on rocks. The art of salting is also very old, going back to the Stone Age. The use of vinegar and spices goes back, at least, to the Greeks and Romans."

--Principles and Methods in the Canning of Fishery Products,
Research Report No. 18 (page 1),
U. S. Fish and Wildlife Service.



TRENDS AND DEVELOPMENTS

North Pacific Fishery Research Vessels

A fleet of 15 research vessels was sent to sea by fishery agencies along the Pacific Coast during the spring, summer and fall of 1961. This was the largest high-seas research fleet ever mustered in the northeastern Pacific. The work of all vessels was in some way related to high-seas exploitation of salmon, king crabs, and bottom fish in the Bering Sea and North Pacific Ocean.



Fig. 1 - The seiner Marine View and schooner Paragon, two research vessels chartered by the U. S. Bureau of Commercial Fisheries to gill net salmon on the high seas. In port at Adak, Alaska, for net repairs and supplies.

This was the seventh season for the program of the International North Pacific Fisheries Commission (INPFC), representing part of the cooperative effort by Japan, Canada, and the United States. In this operation, the vessels Marine View, Windward, Paragon, and Bertha Ann, under charter to the U. S. Bureau of Commercial Fisheries, carried out studies of salmon and king crab distribution and collected samples for scientific analyses. The first two are purse seiners; the Paragon is a halibut schooner.

The Bertha Ann, a converted military refrigerated cargo carrier, represents an in-

novation. This steel vessel, about 170 feet in length, is able to operate in weather which stops the work of the smaller chartered fishing vessels. The Bertha Ann fishes gill nets and has proven her ability to operate successfully in bad weather. For the first time, winter operations will be possible.

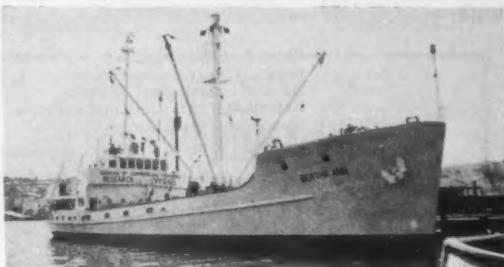


Fig. 2 - M/V Bertha Ann, ready to leave for high-seas experimental gill-net fishing for salmon. The research vessel was chartered by the U. S. Bureau of Commercial Fisheries.

The purse seiners Renown, Commander, Ocean Pride, and Storm, chartered by the Fisheries Research Institute of the University of Washington, tagged salmon to provide information on migrations for the International North Pacific Fisheries Commission. Part of the INPFC program was to operate Japanese-type long lines for salmon from the Fort Ross, under charter to the Fisheries Research Board of Canada. Fish captured by this method have been successfully tagged by Japanese scientists. The Canadians brought an expert long-line fisherman from Japan to supervise operations on the Fort Ross.

Another innovation in 1961 was the trawling survey in the Gulf of Alaska. This was to determine whether bottom fishing, which may be carried out by Japan and Russia, will affect halibut resources fished by Canada and the United States. In this operation the purse seiners Arthur H., Victory Maid, Morning Star, and St. Michael were operated by the International Pacific Halibut Commission.

In addition, the Bureau of Commercial Fisheries chartered the halibut schooner Tordenskjold and operated its own exploratory fishing vessel, the John N. Cobb. Together these six vessels trawled over a broad area of bottom in the Gulf of Alaska extending roughly from the Shumagin Islands to Cape Spencer.

The 15-vessel fleet worked at points on the high seas from Cape Spencer almost to the end of the Aleutian Chain. Information essential to rational exploitation of the high-seas fisheries can be gathered only by going to sea. Information obtained by this seagoing scientific research will be invaluable in assessing the potential of traditional North American fishery resources and the adverse effects upon that resource of the growing high-seas fisheries of other nations.

--Ralph P. Silliman, Chief
Branch of Anadromous Fisheries,
Division of Biological Research,
U. S. Bureau of Commercial Fisheries,
Washington, D. C.



California

SHRIMP LANDINGS IN 1961 EXCEEDED 2 MILLION POUNDS:

California ocean shrimp landings for the 1961 season that ended October 31 totaled 2,006,274 pounds, slightly less than the 1960 record catch of 2,011,826 pounds, California's Department of Fish and Game reported on November 22, 1961.

The 1961 landings were composed of 1,206,847 pounds from the Crescent City area and 799,427 pounds from the Fort Bragg area. Compared with 1960, Crescent City landings were down 121,562 pounds but Fort Bragg landings were up 268,666 pounds.

No shrimp were landed in 1961 at either Bodega Bay or Morro Bay, where early season explorations showed the shrimp populations were scattered.

California's ocean shrimp fishery, established in 1952 following exploratory work by marine biologists of the Department of Fish and Game, has risen steadily to the two-million-pound annual total from the 1952 total of 205,485 pounds. The annual production is controlled by a State-imposed total quota.

However, this quota has not been a limiting factor to date.

MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 61-N-15a & b-Salmon: The midwater trawl operations of the California Department of Fish and Game research vessel Nautilus were continued (Sept. 5-8, 19-22, 1961) in the Carquinez Strait, Point San Pedro, and Half Moon Bay areas to (1) capture marked salmon fingerlings on their seaward migration; and (2) determine areas in the ocean where salmon fingerlings may be captured. A cotton midwater trawl with 15-foot opening and nylon midwater trawl with 25-foot opening were used.

Trawling in Carquinez Strait was conducted between 8 a.m. and 3:30 p.m. and each tow was for 20 minutes. Surface tows were alternated between upstream and downstream and between the north shore, center, and south shore of the channel. A flow meter was used to measure the amount of water strained by the net on each tow.

A total of 64 tows was completed in the Strait during this cruise yielding a catch of 10 king salmon (Oncorhynchus tshawytscha) fingerlings, none of which was marked. No rainbow trout (Salmo gairdneri) were captured.

Five deep trawls were made in the Strait to (1) determine if king salmon were migrating downstream in deeper water; (2) to test the performance of the new 25-foot nylon midwater trawl below the surface; and (3) to collect additional samples of an unidentified species of shrimp occurring in the Strait and Delta waters. No salmon were captured during the deep trawling tows. The net performed satisfactorily below the surface, and the species of shrimp sought was collected, although in smaller numbers than observed earlier in the year.

Other species appearing in the catch, listed in order of abundance, were northern anchovy (Engraulis mordax), striped bass (Roccus saxatilis), American shad (Alosa sapidissima), Pacific herring (Clupea pallasi), shrimp (Paleomon sp.), jack smelt (Atherinopsis californiensis), top smelt (Atherinops affinis), starry flounder (Platichthys stellatus), north-

ern midshipman (*Porichthys notatus*), and white sturgeon (*Acipenser transmontanus*).

The 25-foot nylon midwater trawl was used in an attempt to capture salmon fingerlings in ocean waters off Half Moon Bay. No salmon were taken in four trawls in that area.

Note: Also see *Commercial Fisheries Review*, Nov. 1961 p. 15.

* * * * *

ROCKFISH TAGGING CRUISE IN MONTEREY-SAN SIMEON INSHORE WATERS:

M/V "Nautilus" 61-N-16-Rockfish: The California Department of Fish and Game research vessel Nautilus cruised the inshore waters from Monterey to San Simeon, Calif., to (1) experiment with a mid-depth trawl in capturing blue rockfish, *Sebastodes mystinus*; (2) capture blue rockfish by hook and line for tagging and for stomach and scale samples; and (3) make collections of other species of rockfish for taxonomic purposes.

Four 20-minute tows were made with a mid-water trawl having a 15-foot-square opening. It was towed at depths ranging from 20 to 70 feet and at speeds of 2 to 5 knots. No blue rockfish were captured even when the net was towed through areas where hook-and-line angling indicated their presence. Only one fish, an electric ray (*Torpedo californica*), was taken in the net. Jellyfish formed the bulk of the catch. Several salps were noted.

In all, 868 blue rockfish were tagged. Most required decompression, i.e., removal of air from the air bladder to equal surface pressure. All were anesthetized in a 1/15,000 solution of M.S. 222. Only a few required repositioning of the stomach, i.e. pushing the stomach back into place with a plastic rod through the mouth. The fish were caught from the surface to over 100 feet.

The purpose of the tagging program is to determine whether the blue rockfish entering the sport fishery off central and northern California are from one intermingling population or from separate sub-populations.

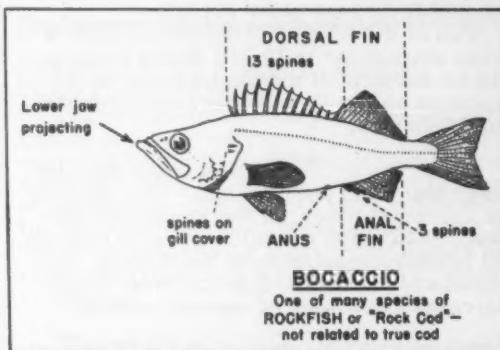
Stomachs and scales were collected from 66 specimens and, in addition, stomachs were obtained from 13 lingcod (*Ophiodon elongatus*).

The next most frequent fish caught was the olive rockfish (*S. serranoides*). Large concentrations were encountered in about 25 fathoms west of Pt. Sur.

Unusually large concentrations of lingcod hampered tagging operations off Point Piedras Blancas and northwest of Cape San Martin.

Copper rockfish (*Sebastodes caurinus*), canary rockfish (*S. pinniger*), gopher rockfish (*S. carnatus*), and yellowtail rockfish (*S. flavidus*) were collected for taxonomic studies.

Other fish caught by hook and line included vermillion rockfish (*S. miniatus*), turkey-red rockfish (*S. ruberrimus*), starry rockfish (*S. constellatus*), rosy rockfish (*S. rosaceus*), China rockfish (*S. nebulosus*),



bocaccio (*S. paucispinis*), black rockfish (*S. melanops*), cabezon (*Scorpaenichthys marmoratus*), jack mackerel (*Trachurus symmetricus*), Pacific mackerel (*Pneumatophorus diego*), Pacific sand dab (*Citharichthys sordidus*), and rock sole (*Lepidotretis bilineata*).



Cans--Shipments for Fishery Products, January-September 1961

Total shipments of metal cans during January-September 1961 amounted to 98,535 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 97,915 tons in the same

period of 1960. Canning of fishery products in January-September this year was con-



fined largely to tuna, jack mackerel, Pacific salmon, and Maine sardines. Although the packs of shrimp and Maine and California sardines were down, greater

packs of tuna and salmon more than offset those declines.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.



Films

TWO HISTORIC FISHERY AREAS TO BE SUBJECTS OF NEW FILMS:

Two of the finest fishing areas, each a great contributor to United States history, will be subjects of motion pictures to be produced by the U. S. Bureau of Commercial Fisheries.

One of the areas is Chesapeake Bay, between Maryland and Virginia. The other is the Columbia River, in the Pacific Northwest. Both pictures will feature the historic and present importance of the fishery resources of the areas, together with other activities and events of special interest.

The Chesapeake Bay picture will be made by ACI Productions, New York City. It will be a 16 mm. sound-color film approximately 28 minutes long. The States of Maryland and Virginia are cooperating with the Bureau in sponsoring the film. Production will be under the direction of the Bureau. Since fishery activities are to be shown for all seasons, the picture will be about a year in the making.

The Columbia River picture will be made by the Motion Picture Division of Walter J. Klein Company, Charlotte, N. C. It also will be a 28-minute, 31 mm. sound-color film. It will be an educational and documentary picture of the commercial fisheries of the Columbia River, featuring the salmon fishery, dams, spillways, electric generators, fishways, and modern hatcheries and laboratories. This film likewise will be a year in production in order to depict the ever-changing salmon activities in the River.



Gear

DEVICE FOR RECORDING NET DEPTH:

An instrument which graphically records depth as a function of time has been developed by the U. S. Bureau of Commercial Fisheries Biological Laboratory, San Diego, Calif. The device was designed for use on tuna purse seines. However, it should be readily adaptable for gill nets and other applications where instantaneous telemetered depth information is not required.



Device for recording depth.

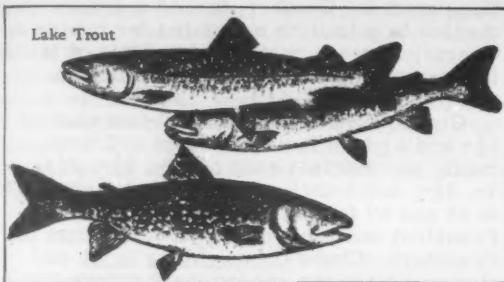
The pressure-sensing device is an "O" ring sealed, spring loaded, piston available in various diameters depending upon the maximum anticipated depth. The recording paper is attached to a drum which is rotated by a clock. The device is made of aluminum, is less than 21 inches long and of near neutral buoyancy. It is rugged enough to survive riding the lead line of a purse seine while the net is being set. The clock starts automatically upon submersion.



Great Lakes

JOINT EFFORTS TO BRING BACK LAKE TROUT TO UPPER GREAT LAKES:

Joint efforts under way to bring lake trout back to the upper Great Lakes gained more momentum in October 1961



when some 4,120,000 green lake trout eggs were taken from brood stock at the Michigan Conservation Department's Marquette hatchery. About 100,000 of the eggs will be hatched and reared for plantings in Michigan's inland lakes.

Yearling trout to be raised from the remaining bulk of eggs are scheduled for release in Lakes Michigan, Huron, and Superior in 1963 under a massive program of lamprey control and fish restoration coordinated by the Great Lakes Fishery Commission (GLFC), the Michigan Department of Conservation reported early in November 1961.

The GLFC, made up of conservation officials from Ontario, the United States Government, and Great Lakes States, has set an annual planting goal of 7 million yearling lake trout in the upper Great Lakes as soon as lampreys are brought under control.

The U. S. Bureau of Commercial Fisheries completed the first series of chemical attacks on lampreys in Lake Superior streams in November 1960. It will continue to operate electrical weir barriers through 1962 on major lamprey-producing streams to measure results of treating and to capture adult lampreys that went into Lake Superior before the streams were treated.

The Bureau hopes to complete the first round of treatment in all lamprey streams tributary to Lakes Michigan and Huron within the next four years.

The October 1961 spawn take at Marquette hatchery is the highest made there since 1959 when plantings were launched experimentally under the lake trout rehabilitation program. Just two years earlier, only 950,000 eggs were collected at the hatchery. In 1960, the hatchery's output rose to 2,450,580 eggs.

Michigan Department fisheries officials report the hatchery's brood stock has built up to a point where it is no longer necessary to net inland lakes for spawn to meet needs of the Great Lakes planting program. Six inland lakes were netted in recent years for egg collection, but efforts in those waters proved uneconomical as compared with spawn-taking operations at the hatchery.

Some 39,000 lake trout were planted in eight lakes of Michigan's northern lower peninsula in the fall of 1961, the Michigan Conservation Department reported. The plantings were made up of two-year-olds averaging seven inches in length.

The U. S. Bureau of Commercial Fisheries reported that its chemical attack against lampreys in East Bay at Grand Marais, Alger County, Michigan, was completed early in November 1961, but results of the highly-potent treatment are not yet fully known.

Some of the lamprey larvae were still alive in test cages set out in the Bay. A relatively small number of game fish was killed by the treatment. Between 50 and 80 rainbow trout, a low number of northern pike, and some perch were killed. Mortality was highest among suckers and minnows.

Federal fisheries men netted the Bay prior to treatment in an effort to salvage as many game fish as possible.

Samples of the Bay's bottom soil will be taken to help determine how hard lamprey larvae were hit in the Bay and its connecting channel by a concentrated solution of toxaphene which was pumped into the waters for two weeks early in November.

The Bureau continued to conduct netting work between the east and west bays to study effects of the treatment. An electric beam trawl will be used in spring 1962 to further size up the lamprey larvae situation.

As in the case of actual treatment, studies will be complicated by the large body of water involved. Previously, the chemical war on lampreys has been waged only in streams.

Treatment of the Bay was approved by Michigan's Conservation Department Director following a public hearing held in Munising in which plans for the project were outlined and favorably received by local residents.



Great Lakes Fisheries

Exploration and Gear Research

EXPLORATORY FISHING VESSEL "KAHO" COMPLETED:

The new 65-foot Great Lakes exploratory fishing and gear research vessel Kaho was accepted by the U. S. Bureau of Commercial Fisheries from the construction contractor on October 31. Trial runs were conducted the same day and they revealed that the Kaho has a top speed of 12 knots, comfortable sea characteristics, and a high degree of maneuverability.

The vessel was completed approximately 5½ months after the contract for construction was awarded.

After a series of shakedown runs in Lake Erie to familiarize vessel personnel with operational characteristics and equipment, the Kaho left her base at Saugatuck, Mich., on November 16, 1961. The first of two trawl exploration cruises, scheduled for Lake Michigan during the remainder of 1961, was started on November 27, 1961.



Great Lakes Fishery Investigations

LAKE ERIE STUDIES TO DETERMINE LENGTH AND AGE OF FISH AT END OF GROWING SEASON, OCTOBER 1961:

Vessel operations for October 1961 were confined to the fall 3 day-night series of trawl hauls at Stations 49 (Bono) and 4 (East

Harbor) and to the biweekly visits at Station 5 (Sandusky Bay). Major emphasis was on the determination of the average lengths of fish of different species and ages at the end of the growing season.

During the 3 day-night trawling series (which duplicated similar spring and summer series), two 10-minute tows were made at each of 3 depths, during the morning, afternoon, and evening (total of 54 tows at each station). Data from collections during the 3 seasonal series will be tabulated to provide information on the relative abundance, distribution, and periodic growth of the more prominent species and age groups during 1961.

More fish were taken at Bono than at East Harbor during the fall series, primarily because of a greater abundance of yearling and 2-year-old yellow perch at Bono. Catches of young-of-the-year fish were somewhat sporadic in both areas although yellow perch, white bass, alewives, and spot-tail shiners were caught rather consistently. With the cooling of water temperatures, smelt of all age groups have again returned to the western basin and were taken in varying numbers. Only 14 young-of-the-year yellow pike or wall-eyes, averaging 8.7 inches in length, were collected at the two stations.

Trawling in Sandusky Bay produced good catches both in numbers and variety. The average number of fish caught per tow was 505, of which about 75 percent were young-of-the-year. Young-of-the-year channel catfish were especially well represented.

Surface water temperatures in the western basin decreased from 66° to 57° F. between October 10 and October 27. Completion of the fall overturn early in the month brought a return to normal dissolved-oxygen conditions in the deeper areas of the central basin.

The semiannual collection of scale samples from major species in the commercial catch was resumed in late October at Ohio ports. Other collections were to be made at Wheatley, Ontario; Erie, Pa.; and Dunkirk, N. Y.

* * * * *

LAKE MICHIGAN FISH POPULATION SURVEY CONTINUED:

M/V "Cisco" Cruise 8, October 10-24, 1961: Strong winds, even more persistent

than usual for October, forced a drastic reduction in activities scheduled for cruise 8. Operations were restricted to State of Michigan waters of northern Lake Michigan.

Gangs of nylon gill nets (50 feet each of 1½- and 1½-inch mesh, 100 feet of 2-inch mesh, and 300 feet each of 2½-, 2½-, 2¾-, 3-, 3½-, and 4-inch mesh) were set overnight at 25 and 50 fathoms off Charlevoix and Frankfort and for 2 nights at 80 fathoms off Frankfort. Chubs (*Leucichthys hoyi*) and alewives were the predominant catches in the Charlevoix area. Chubs at 50 fathoms and alewives at 25 fathoms. A number of smelts and a few yellow perch, white sucker, and other species of chubs were also caught. In the Frankfort area, catches consisted of nearly all chubs (*L. hoyi*) at 25, 50, and 80 fathoms.

The vastly different catches between each 25-fathom set made in the Charlevoix and Frankfort areas may be explained by the great difference in thermal conditions in the areas in which the nets were set. Off Charlevoix the water was homothermous at about 60° F. from top to bottom; this accounted for the catch of yellow perch and white suckers which prefer warm water and the near absence of chubs, and may also have contributed to the large alewife catch. Off Frankfort the thermocline was distinct and the bottom temperature of about 40° F. was more favorable for chubs.

In half-hour bottom tows with a 50-foot balloon trawl at 15, 25, 35, and 50 fathoms off Frankfort, chub catches were 0, 477, 292, and 452 pounds, respectively. All hauls caught alewives (up to 57 pounds at 50 fathoms), and the 50-fathom tow took 190 pounds of deep-water sculpins. The 15-fathom tow caught only a few pounds of alewives and smelt (mostly young of the year) and 5 yellow perch. (The average length of the young of both smelt and alewives was about 2.5 inches.) A 30-fathom tow in Little Traverse Bay (east of Charlevoix) took only 20 pounds of chubs and a few smelt and alewives.

Limnological collections and observations were made at 40-fathom stations off Charlevoix and Frankfort, and at 40 fathoms in mid-lake between Charlevoix and Manistique. Thermal conditions in the lake were very unstable, as high winds resulted in the movement of large water masses. Homothermous conditions from surface to bottom as low as 40° F. and as high as 60° F. were observed

in 25 fathoms of water. In most areas, however, some thermal stratification remained. After a northeast gale near the end of the cruise, an upwelling developed off Frankfort which extended at least 5 miles offshore and in which the surface water temperature was about 40° F. Extremes of surface temperatures during the cruise were 39.2° and 60.8° F. (4.0° and 16.2° C.).

* * * * *

FALL DISTRIBUTION OF FISH IN LAKE SUPERIOR STUDIED:

M/V "Siscowet" Cruise 7: Fall environmental conditions were studied at 3 limnological stations in the Apostle Islands region of Lake Superior--southeast of Stockton Island, northeast of Bear Island, and east of Pike's Bay--September 12-October 2, 1961. Limnological collections included records of water temperature, Secchi-disc readings, water samples for chemical analyses, and bottom and plankton samples. The water was nearly homothermous at all depths above 20 fathoms. Temperatures ranged largely between 50° and 55° F; this represented about a 10-degree increase in bottom temperatures and nearly a 15-degree decrease in surface temperatures since midsummer. Fishery studies included the collection of information on the fall distribution of whitefish, lake herring, and chubs, and on the distribution, survival, and growth of hatchery-reared lake trout. Experimental fishing gear was operated at the following locations: east of Gull Island; Punky Bay; Frog Bay; southeast of Michigan Island; southeast of Stockton Island; Pike's Bay; east of Basswood Island; southeast of Oak Island; west of Ironwood Island; northeast of Cat Island; and west of Outer Island.

In an attempt to locate small, immature lake herring, a gang of 4 gill nets (1 $\frac{1}{4}$ -, 1 $\frac{1}{2}$ -, 2-, and 2 $\frac{1}{4}$ -inch mesh) was suspended 30 feet below the surface in water 14 to 44 fathoms deep at the Gull and Michigan Island stations. The catch from 3 sets was 156 lake herring (37 immature), 17 chubs, 9 smelt, and 1 sculpin.

A standard gang of gill nets (1- to 5-inch mesh) set at 25 fathoms southeast of Stockton Island caught 383 bloater and smaller numbers of smelt, burbot, whitefish, lake herring, and lake trout.

Trawl tows in the Apostle Islands region at depths ranging from 12 to 30 fathoms

yielded, in addition to lake trout, generally small numbers of smelt, chubs, sticklebacks, and sculpins. Unusual catches from single 15-minute tows were: 519 smelt in Pike's Bay; 278 bloater in Frog Bay; and 30 yearling alewives northeast of Cat Island.

To date the Siscowet captured 141 small lake trout (excluding yearlings) in the Apostle Islands region; 124 (88 percent) were fin-clipped and 92 (74 percent) of the hatchery-reared fish were from the 1960 Bayfield plant (average increase in length since planting in June 1960--3.1 inches).

During the cruise the Siscowet recaptured 150 yearling lake trout representing 3 stocks planted in close proximity among the Apostle Islands by the Wisconsin Conservation Department in June 1961.

Although the total number of recoveries is too small to permit definite conclusions, these early returns suggest a relatively better survival of the lake trout reared at Pendills Creek than of the fish reared at Bayfield. The growth of 0.8 and 0.7 inch for the lake trout reared at Bayfield and Pendills Creek is closely comparable to the growth (0.7 inch) observed in August for the lake trout from the 1961 Keweenaw Bay plant.

* * * * *

LAKE TROUT SPAWNING POPULATIONS ASSESSED IN APOSTLE ISLANDS AREA OF LAKE SUPERIOR:

M/V "Siscowet" Cruise 8: The annual assessment of spawning populations of lake trout in the Apostle Islands region of Lake Superior was made October 16 to 22, 1961. A total of 34,800 feet of large-mesh gill nets (32,400 feet of 6-inch mesh and 2,400 feet of 5-inch mesh) were fished at depths of 3 $\frac{1}{2}$ to 12 fathoms on Gull Island Shoal, between Michigan and Gull Island, and just east of Michigan Island. Only 17 lake trout were captured, all of which were ripe males. The fish ranged in length from 20.2 to 30.2 inches (average, 25.1 inches); 8 of the trout bore healed lamprey scars but none had fresh scars. Eleven of the trout were tagged and released. (The Wisconsin Conservation Department's research vessel Salmo fished 32,000 feet of 5- and 6-inch mesh gill nets on other lake trout spawning grounds--off Rocky, Manitou, Ironwood, Cat, and Stockton Islands--with similar results. Fifteen ripe male lake trout, but no females were

caught; no fresh lamprey scars were observed.)

Small-mesh gill nets (150 feet each of $1\frac{1}{2}$ - and $2\frac{1}{2}$ -inch mesh) which were fished with the large-mesh nets on Gull Island Shoals caught 298 longnose suckers, 27 lake herring, 18 round whitefish, 2 burbot, and 1 yellow perch. No fish eggs were found in the stomachs of about 50 suckers which were examined.

Ages were determined for 29 of the lake trout captured by the research vessels Salmo and Siscowet. The number of fish in each of 5 age groups which were represented was: V, 8; VI, 17; VII, 2; VIII, 1; and IX, 1.

Water temperatures on the lake trout spawning reefs ranged from 47.5° F. to 50.4° F.



Gulf Exploratory Fishery Program

UNDERWATER OBSERVATIONS OF SHRIMP TRAWLS IN ACTION CONTINUED:

M/V "George M. Bowers" Cruise 35 (October 12-22, 1961): Underwater observations of shrimp trawls in action were continued in the Gulf of Mexico by the George M. Bowers, exploratory fishing vessel of the U. S. Bureau of Commercial Fisheries. Measurements of a 40-foot four-seam semi-balloon shrimp trawl were obtained with 4 door sizes (5 foot, 6 foot, 7 foot, and 8 foot) at various speeds and scope ratios.

The configuration of this design was measured for trawls constructed from cotton as well as from nylon webbing. These measurements and strain measurements of the various components of the trawling assembly are to be made also of the other basic shrimp trawl designs.

Observations and movies of a shrimp trawl operating on loggerhead sponge and coral bottom were made in the Carabelle (Florida) area.

Data collected during this and previous cruises concerning underwater observations of shrimp trawls in action are being analyzed at the Bureau's Exploratory Fishing and Gear Research Base, Pascagoula, Miss.

Note: See Commercial Fisheries Review, Dec. 1961 p. 32.



Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Belle of Texas" Cruise BT-9: A series of 12 tows of 3 hours each equally divided between two statistical areas and depth ranges were made with a 45-foot shrimp trawl by the U. S. Bureau of Commercial Fisheries chartered research vessel Belle of Texas operating from the Bureau's Biological Laboratory in Galveston, Tex., during November 7-10, 1961. The results were nearly negative with only small quantities caught in both statistical areas. In one statistical area (F&WS Grid Zone 15) for each 3-hour tow in the depth range up to 25 fathoms only 22 pounds (heads-on) of shrimp were caught; only 8 pounds were caught in the depth range of 25-60 fathoms. The size caught in the the depth range up to 25 fathoms was 21-25 count heads-off, almost evenly divided between white and brown. In the depth range of 25-60 fathoms, the size was 15-20 count heads-off, all brown.

In the second statistical area (Grid Zone 16), in the depth range up to 25 fathoms only 13 pounds (heads on) of shrimp were caught, almost equally divided between white and brown, per 3-hour tow. The size of the brown shrimp was 26-30 count (heads off) and the size of the white was 21-25 count. In the 25-60 fathom range in the second statistical area, only 18 pounds of brown shrimp were caught, 12-15 count (heads off).

M/V "Belle of Texas" Cruise BT-10 (November 15-17, 1961): The M/V Belle of Texas made another series of six tows equally divided between two statistical areas and two tows in each depth range with a 45-foot shrimp trawl. In the first (Grid Zone 19) of the two statistical areas covered, only 17 pounds of shrimp (heads on) were caught in the depth range up to 20 fathoms, mostly brown shrimp 26-30 count (heads off). In the 20-40 fathom range 66 pounds of brown shrimp were caught, 21-25 count. In the 40-60 fathom range, only 3 pounds of brown shrimp were caught, 21-25 count.

In the second (Grid Zone 20) of the two statistical areas, 120 pounds of shrimp were caught in the depth range up to 20 fathoms, mostly white shrimp 21-25 count. Only 1

pound of brown shrimp 21-25 count was caught in the 20-40 fathom zone; and 27 pounds of 15-20 count brown shrimp were caught in the 40-60 fathom range.

Note: See Commercial Fisheries Review, December 1961 p. 32.



Hawaii

SKIPJACK TUNA LANDINGS, JANUARY-OCTOBER 1961:

Landings of skipjack tuna in Hawaii during October 1961 were about 530,000 pounds, or about 130,000 pounds below the 1948-60 average landings for the month.

Length measurements in October showed little change in size composition of the catch from that observed during the latter part of September. Modal groups were centered around 48 cm., 63 cm., and 79 cm. (5.0, 12.5, and 26.9 pounds, respectively), with the 63 cm. mode dominant. Partial gross receipts show a similar picture, with the sizes less than 8 pounds, 8-15 pounds, and over 15 pounds making up 22 percent, 37 percent, and 41 percent of the landings, respectively.

Total estimated landings for January-October 1961 were 10.9 million pounds. On this basis, it was estimated that total landings for the year would be about 11 and 12 million pounds (compared with an average of 10 million pounds).



Industrial Products

U. S. FISH MEAL, OIL, AND SOLUBLES PRODUCTION, JANUARY-OCTOBER 1961:

The production of meal and oil during October 1961 was less than October 1960. However, the quantity processed during January through October 1961 was greater than during the same period of last year.

During October 1961, fish meal production amounted to 16,900 tons--81 percent from menhaden; fish solubles and homogenized fish amounted to 8,400 tons; and the production of marine-animal oils totaled 1.9 million gallons--90 per-



cent from menhaden. Compared with October 1960, the meal production was down 30 percent, and marine animal oil dropped 37 percent.

The quantity of fish meal processed during the first 10 months of 1961 amounted to 265,500 tons--8,300 tons above the same period of the previous year. Fish solubles and homogenized fish production totaled 100,000 tons--7,500 tons greater than the 10-month period of 1960. Production of marine-animal oils during the first 10 months of 1961 amounted to 30.5 million gallons--5.3 million gallons above the same period last year.

Imports of fish meal during January through September 1961 (159,100 tons) were 64 percent more than during the same period of 1960, while imports of fish solubles (2,500 tons) were 11 percent below the 1960 9-month total. Exports of fish oils and fish-liver oils during the 9-month period of 1961 of 95.4 million pounds (12.7 million gallons) dropped 13.4 million pounds or 1.8 million gallons compared with the same period of 1960.

Table 1 - U. S. Production of Fish Meal, Oil, and Solubles, January-October 1961

Product	Jan.-Oct.		Total 1961
	1961	1960	
.....(Tons).....			
<u>Fish meal and scrap:</u>			
Alewife	89	1,092	1,092
Herring:			
Alaska	3,576	6,103	6,103
Maine	1,050	2,612	2,915
Menhaden 1/.....	230,486	204,184	218,423
Sardine, Pacific	2/ 1,397	2,331	3,301
Tuna and mackerel	2/ 17,191	22,582	26,325
Unclassified.....	11,708	18,288	21,279
Total	265,497	257,192	279,438
Shellfish and marine animal meal and scrap	3/	3/	10,309
Grand total meal and scrap.	3/	3/	289,747
<u>Fish solubles</u>	89,534	83,111	89,377
Homogenized condensed fish	10,487	9,397	9,552
.....(Gallons).....			
<u>Oil, body:</u>			
Alewife	6,900	66,121	66,121
Herring:			
Alaska	625,786	1,385,218	1,385,218
Maine	4/	130,293	132,973
Menhaden 1/.....	28,237,949	21,981,419	24,453,736
Sardine, Pacific	2/ 37,243	123,427	143,654
Tuna and mackerel	2/ 586,860	413,846	507,180
Other (including whale)	1,026,866	1,088,092	1,137,527
Total oil	30,521,604	25,188,416	27,826,409

1/Includes a small quantity produced from thread herring.

2/Data furnished by the California Department of Fish and Game, Marine Resources Operations.

3/Not available on a monthly basis.

4/Included in "other" in order to avoid disclosure of the production of individual firms.

* * * * *

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January-September 1961: Based on domestic production and imports, the United States supply of fish meal for the first 9 months of 1961 amounted to 408,000 tons--77,000 tons above the same period of 1960. Domestic production was 15,000 tons and imports 62,000 tons greater than for the same period in 1960. Peru continued to lead other countries as the principal source of imports with shipments totaling nearly 105,000 tons during the first 9 months of 1961.

All factors indicate that the total United States supply of fish meal in 1961 will exceed the peak year of 1959 when the quantity amounted to nearly 440,000 tons.

U. S. Supply of Fish Meal and Solubles, January-September 1961 with Comparisons

Item	January-September		Total 1960
	1961	1960	
..... (Short Tons)			
<u>Fish Meal and Scrap:</u>			
<u>Domestic production:</u>			
Menhaden	216,834	183,849	218,423
Tuna and mackerel	15,416	20,705	26,499
Herring, Alaska	3,576	6,103	6,103
Other	12,819	22,443	39,112
Total production	1/248,645	1/233,100	290,137
<u>Imports:</u>			
Canada	31,194	27,546	30,982
Peru	104,522	51,093	68,156
Chile	10,078	12,148	21,183
Angola	1,543	360	888
Republic of South Africa	10,526	5,829	7,073
Other countries	1,277	357	3,279
Total imports	159,140	97,333	131,561
Available fish meal supply	407,785	330,433	421,698
<u>Fish Solubles:</u>			
<u>Domestic production 2/</u>	91,603	85,316	98,929
<u>Imports:</u>			
Canada	859	809	869
Denmark	28	1,858	1,858
Other countries	1,621	165	447
Total imports	2,508	2,832	3,174
Available fish solubles supply	94,111	88,148	102,103

1/Preliminary. Based on reports from firms which accounted for 96 percent of the 1960 total production.
2/50 percent solids. Includes production of homogenized-condensed fish.

The United States supply of fish solubles, including homogenized fish, during January-September 1961 totaled 94,000 tons--6,000 tons more than during the same period in 1960. Solubles and homogenized fish manufactured from domestically-caught fish accounted for nearly all of the supply. Only 3 percent of the supply was imported during the first 9 months of 1961.

* * * * *

MAJOR INDICATORS FOR U. S. FISH MEAL, SOLUBLES, AND OIL, NOVEMBER 15, 1961:

Item and Period	Fish Meal Production and Imports			
	1961	1960	1959	1958
..... (Short Tons)				
<u>Production:</u>				
November	1/	8,725	10,797	9,749
October	14,100	24,455	22,026	11,630
January-October 2/	262,745	242,486	250,218	189,230
Jan.-December Totals	1/	290,137	306,551	248,140
<u>Imports:</u>				
November	1/	6,149	3,873	6,082
October	1/	12,515	3,821	5,899
September	13,941	9,487	9,224	5,078
January-September	159,140	97,333	113,923	79,381
Jan.-December Totals	1/	131,561	132,925	100,352
Fish Solubles Production and Imports				
Item and Period	1961	1960	1959	1958
..... (Short Tons)				
<u>Production 3/:</u>				
November	1/	3,524	4,628	8,888
October	7,400	7,192	12,487	8,867
January-October	99,000	92,508	155,302	114,984
Jan.-December Totals	1/	98,929	165,359	130,177
<u>Imports:</u>				
November	1/	282	3,089	867
October	1/	-	1,908	2,548
September	263	36	1,782	253
January-September	2,508	2,832	21,213	5,972
Jan.-December Totals	1/	3,174	26,630	14,567
Fish Oil Production and Exports				
Item and Period	1961	1960	1959	1958
..... (1,000 Gallons)				
<u>Production:</u>				
November	1/	1,202	1,147	1,028
October	1,700	3,024	2,176	1,139
January-October 4/	30,320	24,385	21,352	18,555
Jan.-December Totals	1/	27,879	24,978	22,028
<u>Exports:</u>				
November	1/	1,952	813	2,037
October	1/	591	1,911	3,591
September	1,269	1,861	1,129	665
January-September	12,717	14,504	13,929	6,528
Jan.-December Totals	1/	19,155	19,264	12,599

1/Not available. 2/Does not include crab, shrimp, and miscellaneous meals. 3/Includes homogenized fish.

4/Represents over 95 percent of total production.

Note: Data for 1961 are preliminary.

**Maine Sardines****MAINE LEGISLATURE EXTENDS SARDINE CANNING SEASON:**

The Maine State Legislature has granted the Maine sardine industry (staggered by its shortest pack in 23 years) an additional 5-1/2 months to operate. Without a dissent-

ing vote, the Legislature in a Special Session early in December 1961, authorized canning on a year-around basis until January 1, 1963, when the legal sardine canning season will automatically revert back to an April 15 opening and December 1 closing.

The total pack to December 1 was approximately 679,000 cases against 1,970,000 cases for the 1960 season, and an average of well over 2 million cases for the past 15 years. The last critically short pack which occurred in 1938 totaled 659,000 cases.

Although there was considerable industry opposition to any extension, the legislators agreed with the proponents that canning operations should be continued through the winter to provide much needed employment in coastal towns and to protect the industry's nationwide distribution and consumer purchase patterns.

Opponents based their arguments on conservation and the difficulties of obtaining fish as well as the winterizing and operation of plants on a profitable basis.

Two bills were considered, one to extend the season for a month for 1961 only and the other to permit year-around canning for two years. After a four-hour public hearing, the Committee unanimously voted for the compromise.

No official count is yet available but it is expected that at least a dozen of the industry's 31 plants will operate, with more held in readiness to open if the fish supply is adequate.

During the war years, 1942-46, year-around canning was permitted as an emergency measure and the average winter pack was about 325,000 cases with 550,000 produced in 1955.

However, as the proponents pointed out at the legislative hearing, the methods of finding and taking fish are now much more advanced and they believe that this will assure greater supplies of raw material.

Although no clear-cut explanation of the 1961 shortage of fish has been given, U. S. Bureau of Commercial Fisheries scientists see a possible clue in the fact that there has been a shift in the ocean currents in the Gulf of Maine. They state that this is a common occurrence and usually of a temporary nature that corrects itself in a matter of a few weeks or months.

The scientists have been unable to find any biological reasons and therefore they see no indication that the shortage should continue through 1962. A further optimistic note is that the 1938 shortage was followed by a banner year in 1939 and for 20 years thereafter except for a few minor fluctuations.

There appeared to be plenty of fish offshore all season but they did not come in to areas where they could be taken, which is another reason why the scientists believe it was a matter of distribution rather than supply.

CANNED STOCKS, NOVEMBER 1, 1961:

Distributors' stocks of Maine sardines totaled 202,000 actual cases on November 1, 1961, a drop of 75,000 cases or 27 percent from the 277,000 cases on hand on November 1, 1960. Stocks held by distributors on July 1, 1961, amounted to 208,000 cases, and on June 1, 1961, totaled 215,000 cases, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on November 1, 1961, totaled only 221,000 standard cases (100 $\frac{3}{4}$ -oz. cans), a drop of 1.0 million cases (82 percent) as compared with November 1, 1960. Stocks held by canners on July 1, 1961, totaled 201,000 cases and on June 1, 1961, totaled 294,000 cases.

The low level of current stocks reflects one of the shortest packs of Maine sardines in recent years. The total pack to December 1, 1961, was 679,000 standard cases. In the same period of 1960 the pack was 1,970,000 cases.

At the beginning of the 1961 packing season on April 1, the carryover at the canners' level was about 457,000 standard cases. Adding the pack of 630,000 cases as of November 1, 1961, results in a total



supply of 1,087,000 cases as of that date--1,196,000 cases less than the supply of 2,283,000 cases reported on November 1, 1960. The short pack has affected shipments, which amounted to 409,000 cases from April 1-November 1, 1961, as compared to 1,025,000 cases in the same period of 1960.

Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, November 1, 1961, with Comparisons ¹												
Type	Unit	1961/62 Season		1960/61 Season				1959/60 Season				
		11/1/61	7/1/61	6/1/61	4/1/61	1/1/61	11/1/60	7/1/60	6/1/60	4/1/60	1/1/60	11/1/59
Distributors	1,000 actual cases	202	208	215	267	233	277	172	197	252	235	296
Canners	1,000 std. cases ²	221	201	294	506	1,029	1,258	359	235	397	843	1,001

¹Table represents marketing season from November 1-October 31.
²100 $\frac{3}{4}$ -oz. cans equal one standard case.

The 1961 season opened late and fishing was consistently spotty. The best catches were made in the mid-coastal areas while the season was almost a complete bust in the traditionally active Hancock and Washington County waters and not much better in the western or Portland area.

Canners' inventories of canned Maine sardines were reported at a very low level on December 4, 1961.

* * * * *



North Atlantic Fisheries

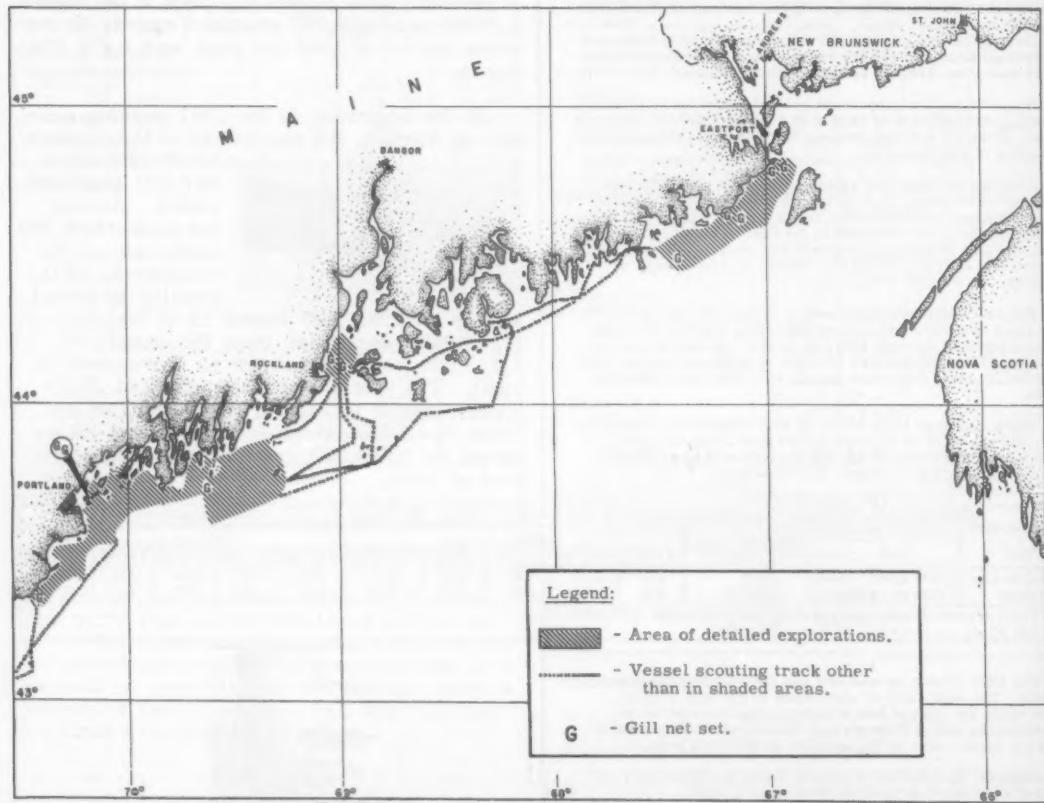
Exploration and Gear Research

COMMERCIAL CONCENTRATIONS OF HERRING SOUGHT OFF NEW ENGLAND COAST:

R/V "T-476" Cruise 61-1, October 9-November 3, 1961: A search for herring along the northern New England coast was conducted with the Bureau's exploratory fishing vessel T-476 during this cruise. The purpose of the cruise was to scout for commercially-usable concentrations of sardines and to report the size and location of any such concentrations found to the sardine industry. The area of explorations extended from Cape Ann, Mass., to Canada. Coastal waters were searched by echo-sounder, by visual watch for surface indications, and by setting gill nets.

Herring were located in several areas. One school was sounded in Grand Manan Channel off Cutler Harbor. However, the fish were in water too deep for conventional fishing methods. Daytime sampling (with vertical gill nets) were unproductive due to the clearness of the water. Subsequent efforts to locate this school of herring at night were unsuccessful. A blind night set (with no fish traces showing on the sounding machine) was made in the area using surface gill nets. Only a few sardines (approximately 6 inches average length) were taken in the set. (It was later learned that this school had been watched for some time by commercial fishermen but had never moved into waters that would permit their being caught.)

Promising evidence of fish were found in the Pleasant Bay area near Ladle Ledge,



Norton Island, and Flint Island. The fish, as interpreted from tracings on the echo-sounder, seemed to be in small groups of from 12 to 20 feet in diameter with 200-700 feet between concentrations. Similar, but not as extensive, fish tracings were encountered near Petit Manan Island and the western side of Schoodic Island. This information was relayed to commercial fishermen in the area for possible use should the fish school up.

Scattered midwater fish tracings were found in the vicinity of Isle Au Haut and Martinic Rock. The depth of water was about 55 fathoms; the traces were generally 4 to 14 fathoms below the surface.

Other findings of interest included persistent traces of individual fish or small groups of fish that were found in the vicinity of the eastern end of West Cod Ledge, between Bantam Rock and Damariscove Island whistle buoy, and near Mt. Desert Rock whenever those areas were inspected.

Eleven gill-net sets were made during the cruise. Of that number, 6 sets were made with a vertical-type gill net (set from the surface to 10 fathoms deep) and 5 sets with conventional-type gill nets. Of the conventional gill-net sets, 4 were surface sets and 1 was a bottom set. Species taken included: herring (*Clupea harengus*); blue-backs (*Alosa aestivalis*); whiting (*Merluccius bilinearis*); hake (*Urophycis chuss*); and dogfish (*Squalus acanthias*).



North Atlantic Fisheries Investigations

SEA SCALLOP SPAWNING CHECKED OFF MASSACHUSETTS:

M/V "Charlotte" Cruise 2: In order to check spawning of sea scallops 2 to 5 miles offshore northwest of Sandwich, Mass., the vessel Charlotte, chartered by the U. S. Bureau of Commercial Fisheries, operated in that area on November 14, 1961. A total of six 20-minute tows were made and 250 scallops were measured, sexed and observed for condition of gonads; assorted fish and invertebrates were brought back to the Laboratory.

Two percent of the scallops were un-spawned, 18 percent had started, and 80

percent were spent. Water temperature isothermal, about 50.8° F. at 68 feet.

* * * * *

NORTH ATLANTIC GROUNDFISH SURVEY COMPLETED:

After completing the second part of an extensive groundfish survey which included sampling the fish populations in the southern New England area, as far south as Hudson Canyon, on Georges Bank and the Great South Channel, the fisheries research vessel M/V Delaware returned to Gloucester, Mass., on November 20, 1961.

The vessel departed from Woods Hole, Mass., on November 8 and fished at selected stations throughout the area. Biological data collected included blood samples from scup, red hake and white hake; age and growth material from haddock, cod, fluke, yellowtail, and whiting; and whiting stomachs. Special collections of young haddock and longfin hake were made for further study in the laboratory. Invertebrates (such as shrimp, starfish, and others) caught at each station were preserved and returned to the laboratory. Hydrographic observations were made throughout the cruise and bottom drift parasols were released at each station.

Note: Also see Commercial Fisheries Review, Dec. 1962 p. 41.



Nutrition

CARDIOLOGIST RECOMMENDS CHANGE IN ARMY DIET:

"Atherosclerosis in the Armed Forces: Should the Military Diet be Altered?" was the subject of a presentation at the annual meeting of the Association of Military Surgeons of the United States on November 8, 1961, by two top medical officers of the U.S. Army.

Col. Weldon J. Walker, Chief, Cardiology Service, Department of Medicine, Walter Reed General Hospital and Consultant in Cardiology to the Surgeon General of the Department of the Army, and Lt. Col. Jacques L. Sherman, Jr., Chief, Medical Research Branch, U. S. Army Medical Research and Development Command, made the presentation which was concluded with the following "Summary and Recommendation":

"Atherosclerosis is a major cause of death and disability among military personnel. The results of population studies show that the standard Army diet is of the type that has been associated with an increased incidence of hypercholesterolemia and atherosclerosis. It is therefore recommended that consideration be given to the feasibility of altering the military diet so that dietary fat does not exceed 35 percent of the total caloric intake, and that a greater proportion of this fat should consist of polyunsaturated fatty acids. Such a change is feasible without impairing the palatability of the diet, and there is no evidence that it would be harmful to anyone. The desirability of the recommended change is supported by the best scientific information available at the present time."

The portion of the paper of most interest to the fishery and allied industries follows:

". . . Because of the conflicting data and numerous gaps in our knowledge concerning the relationship of cholesterol and other lipids to atherosclerosis, many have felt that the clinician should avoid attempts to draw prophylactic and therapeutic implications at the present state of our knowledge. However, if we demanded complete knowledge of a disease entity before treating a patient for the disease or attempting to prevent it, most of us would never have practiced medicine. In view of the magnitude of the problem, it would seem imperative to ask if we are not justified in drawing a few tentative conclusions from the data available, so long as these views and conclusions are not potentially harmful to the individual and remain flexible enough to be modified as additional facts become available.

"The Surgeon General in AR-40-564, 9 February 1956, prescribed the basic standards of diet in terms of nutrients for the military ration. In this regulation minimum levels for the physically active soldiers are established for calories, protein, calcium, riboflavin, niacin, vitamin A, and vitamin C. A minimum of 3,600 calories and 100 grams of protein are prescribed for the physically active soldier. No recognition is made of either fat or carbohydrate. Currently the "Joint Army/Air Force Master Menu" is calculated to provide from 4,100 to 4,400 edible calories with the expectation that there will be a kitchen and plate waste of 500 to 800 calories. In addition, Public Law

690 was enacted by the 83rd Congress to provide an increased allowance of dairy products for the Armed Forces diets. In compliance with this law, it has been the policy of the Quartermaster General to allow up to 22 ounces of milk per ration in addition to the milk included in the Master Menu.

"With the above food allowances in effect, it is of interest to know what the soldier actually eats. Recent nutritional surveys accomplished at four Army training camps show that actual total intake is well above the minimum daily recommended allowance. The average total food intake was 4,265 calories with 42.4 percent of the calories being supplied by fat, 45.4 percent by carbohydrates, and 12.2 percent by protein.

"Evaluation of the actual foods consumed showed that of the 210 grams of fat, 41 to 46 percent is saturated, 35 to 40 percent is monounsaturated (mostly as oleic acid), and 15 to 20 percent is made up of polyunsaturated fatty acids. Previously cited population studies have indicated that such diets are associated with a high incidence of atherosclerosis.

"In January, 1961, the Central Committee for Medical and Community Program of the American Heart Association published a report on dietary fat and its relation to heart attacks and strokes. The conclusion of this report states, 'The reduction or control of fat consumption under medical supervision, with reasonable substitution of polyunsaturated for saturated fats, is recommended as a possible means of preventing atherosclerosis and decreasing the risk of heart attacks and strokes. This recommendation is based upon the best scientific information available at the present time.'

"No precise figures exist for the total percentage of calories which should be provided by fat, nor is there established an exact proportion of saturated to unsaturated fat for an ideal diet. There is, however, general agreement among nutritionists who have studied the problem that a diet providing from 25 to 35 percent of total calories from fat is reasonable. It is also generally agreed that substitution of polyunsaturated fat for a substantial part of the saturated fat in the diet is desirable. Total caloric intake should, of course, be adjusted to maintain ideal weight.

"Diets based upon these principles have been used in several metabolic studies which show clearly that abnormal serum lipid levels can be reduced toward normal. More important, such a diet is being used in a study conducted by the New York City Department of Health. The 'Prudent Diet' used in this study restricts the dietary fat intake to 30 percent of total calories with polyunsaturated fatty acids predominating over the saturated fats. There is a reduction in foods such as whole milk, cream, butter, hard cheeses, beef, pork, solid shortening, and chocolate, which are high in saturated fats. In contrast, chicken, turkey and other fowl, fish and shellfish, cottage cheese, cereals, fruits, nuts, and natural vegetable oils are all relatively high in polyunsaturated fatty acids and are therefore recommended.

"This diet has proven to be palatable, inexpensive, and effective in reducing serum cholesterol and beta-lipoprotein levels in persons on normal activities who eat at home under their own supervision. This does not represent a radical change in the American diet. Many of the changes are substitutions: certain margines for butter, skim milk for whole milk, vegetable oils for solid shortenings, sponge and angel food cake for richer pastries, more fish and fowl, and less beef and pork. Controlled, long-range dietary studies to assess the influence of such dietary changes on longevity is an obvious field for meaningful clinical research."



Salmon

OUTLOOK FOR BRISTOL BAY RED SALMON RUN IN 1962 IS POOR:

The 1962 Bristol Bay, Alaska, red salmon run is expected to drop off from the runs of the past two years, the Alaska Commissioner of Fish and Game announced late in November 1961. The prediction was based on studies by the Alaska Department of Fish and Game, the U. S. Bureau of Commercial Fisheries, and the University of Washington Fisheries Research Institute. All three agencies are participating in coordinated salmon research in the Northwest.

The total Bristol Bay red salmon run (including any Japanese catch made on the high seas) is expected to be between 6 million and 12 million fish, with about 9 million fish con-

sidered a probable total. In 1960 the Bristol Bay red salmon run was 37 million fish and the 1961 run was 18 million fish--the Japanese catch is not included in the totals for both those years.

The Alaska Commissioner stated that in 1962 the expected runs of red salmon to the several Bristol Bay districts (without making allowances for fish the Japanese may catch) are estimated at: Naknek-Kvichak, 6.3 million fish; Nushagak, 900,000 fish; Egegik, 400,000 fish; and Ugashik, 1.7 million fish.

The low predictions are based on several factors, including low escapements in 1957 and 1958 and low out-migrations of young salmon from those escapements. There also appeared to be an unusually high mortality of young salmon which entered the sea in 1959.

The outstanding feature of the 1962 run is the likelihood that the important Nushagak and Egegik district runs will be so poor that there is serious question whether Alaska will feel it advisable to permit the usual type of operation in those fisheries.

It was pointed out that several types of information were used in arriving at the estimates and that variation from the above figures for individual districts can be expected.

The Alaska Commissioner stated that: "Barring any impact whatsoever of the high-seas fishery, the size of the catch in the various districts of Bristol Bay can be expected to range from 'only fair' to 'nothing at all.'

* * * * *

NEW METHOD OF MARKING FINGERLINGS:

A new method of marking fingerling salmon has been developed by the Seattle Biological Laboratory of the U. S. Bureau of Commercial Fisheries. At the Leavenworth Hatchery food was withheld from approximately 50,000 fingerling sockeye salmon for a period of two weeks. This brief period of starvation resulted in no greater mortality and only 2 percent less growth than in a control group of fish which were fed in the normal way. A distinctive annular ring appeared on scales of 84 percent of the starved fish. Ultimate development of this

new technique, if successful in all its aspects, will permit marking of almost the entire production of a hatchery at very little cost.

* * * * *

RETURNS HIGH AT OREGON STATE HATCHERIES IN FALL OF 1961:

A large number of silver salmon returned to Oregon Fish Commission salmon hatcheries as of November 1961, according to a statement by the Director of Fish Culture.

"We now have on hand enough silver salmon on eggs and ripening adults to operate this year's silver-rearing program even if we did not take another fish this season," the Director reported. "Normally November and December are the big months for silver salmon on spawning runs." The heavy return of fish to hatchery streams as early as November augurs an exceptionally large run of fish or an unusually early one, he further stated.

At Fall Creek, site of the Fish Commission's Alsea Salmon Hatchery, for example, 1.6 million eggs were reported on hand as of November 3, with another 500,000 expected to be taken from ripening adults in the hatchery's holding pond. This was the largest egg take at the Alsea Hatchery since it began operations in 1952. To that date, 1,200 adult females and 1,100 adult males had been taken at the Fall Creek installation in addition to 3,000 silver jacks. Returns at other stations handling silver salmon were comparable.

The 1958 brood, represented in the current hatchery returns of adult silvers from the ocean, was the first reared under the new feeding program initiated at Fish Commission hatcheries three years ago. Young salmon are started on a "wet" diet composed essentially of finely ground meat and fish products. Research has shown that raw salmon viscera, one of the components of the wet diet, is responsible for transmission of various diseases to the young fish. Under the new program this portion of the diet is now pasteurized, thus eliminating one of the primary causes of hatchery fish mortality. The development of the nutritionally-complete Oregon moist pellet, through the cooperative efforts of the Fish Commission and Oregon State University specialists, has also made a major contribution to the success of the hatchery production program. Silver salmon are fed these pellets from the time they reach $2\frac{1}{2}$ to 3 inches in length until they are

ready for release as yearlings, at which time they usually average from 6 to 7 inches in length.

The superintendent of the Alsea Salmon Hatchery estimated that sportsmen took over 1,000 salmon from the stream below the hatchery prior to its closure on November 1 under provisions of the winter sport fishing regulations. "This is a new sport fishery," he reported. "Prior to this year the silver run was not sufficiently large to attract any appreciable number of anglers."

In a spot check of sport fishermen angling downstream from the Commission's rack on the East Fork of the Millcoma River in Coos County, 24 out of 25 silver salmon examined in a creel check were marked fish reared and released from the Commission's Millcoma salmon-rearing pond.



Shellfish

TWO SANITATION CENTERS TO BE BUILT:

The Secretary of Health, Education and Welfare, announced early in November 1961 that the U. S. Public Health Service will build a shellfish sanitation research center about 30 miles south of Mobile, Ala. This is one of two such installations authorized by Congress in the last session. The site of the other laboratory has been selected adjacent to the Rhode Island University Marine Laboratory. A third laboratory is already in operation on the Pacific Coast at Purdy, Wash.

The Gulf Coast laboratory will be located on the west side of Mobile Bay on Dauphin Island at Indian Mound Park. The Dauphin Island property was presented recently to the Alabama Department of Conservation for use as a public park and as a site for a seafood research facility. The Seafood Division of the Alabama Department of Conservation plans to construct a research building on an adjacent site.

About 25 persons will be employed at the Alabama installation. The new center will be devoted to research and technical assistance in shellfish sanitation, and will be a part of the Federal Government's expanding activities in the field of oceanographic research.



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS AS OF DECEMBER 1, 1961:

Item and Period	1961	1960	1959	1958	1957
Total landings, S. Atl. & Gulf States ¹	(1,000 Lbs., Heads-Off)				
December	1/	7,097	8,716	8,099	6,718
November	9,100	14,454	12,412	12,416	9,302
October	12,479	21,690	19,602	16,461	14,256
January-November	83,300	133,938	121,943	108,453	109,520
January-December	1/	141,035	130,659	116,552	116,238
Quantity used for canning, Gulf States ² :					
December	1/	977	1,278	1,943	882
November	1,600	1,614	2,312	3,424	953
October	2,135	2,567	2,531	3,489	1,616
January-November	14,178	27,617	23,401	24,461	17,504
January-December	1/	28,594	24,679	26,404	18,386
Frozen inventory (as of end of each month):					
raw headless only ³ :					
December	1/	40,913	37,886	32,844	21,719
November	1/	37,264	37,334	30,211	22,326
October	17,811	31,209	33,057	24,620	20,362
September	13,361	24,492	26,119	18,079	16,896
January-December monthly avg.	1/	25,954	27,297	18,008	13,627
Imports ⁴ :					
December	1/	12,411	10,611	10,447	6,785
November	1/	13,516	10,269	10,617	6,789
October	1/	14,211	15,340	11,463	9,237
September	8,529	8,190	7,541	7,620	7,471
January-September	79,175	73,280	70,335	52,866	46,786
January-December	1/	113,418	106,555	85,394	69,676

1/Not available.

2/Pounds on headless shrimp determined by multiplying the number of standard cases by 33.

3/Shrimp products other than raw headless not included.

4/Includes fresh, frozen, canned, dried, and other shrimp products as reported by U. S. Bureau of Customs.

Note: Data for 1961 preliminary. November 1961 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.

CENTRAL ALASKA CATCHES OUTSTANDING:

A total of over 3.2 million pounds of shrimp was caught by two shrimp trawlers, operating off Kodiak Island in 1961 (to October 28), according to records of the Alaska Department of Fish and Game. The average catch per trip for one vessel was 75,265 pounds for 23 trips, and the other vessel averaged 68,654 pounds per trip for 22 trips. One trip of 7 days yielded 102,997 pounds, or nearly 8 tons per drag.

Operating out of Seward, Alaska, the two trawlers fished entirely in the Sitkalidka Straits, southeast of Kodiak Island, in 60 to 65 fathoms of water. The average drag was 30 minutes to one hour and each trip was about 1½ days.

The two trawlers are in the 75- to 80-foot class and all trawling was done with 57-foot Gulf of Mexico-type shrimp trawls.

Due to the very small size of the shrimp, expanded production will depend on the solution of processing and marketing problems.



South Atlantic Exploratory

Fishery Program

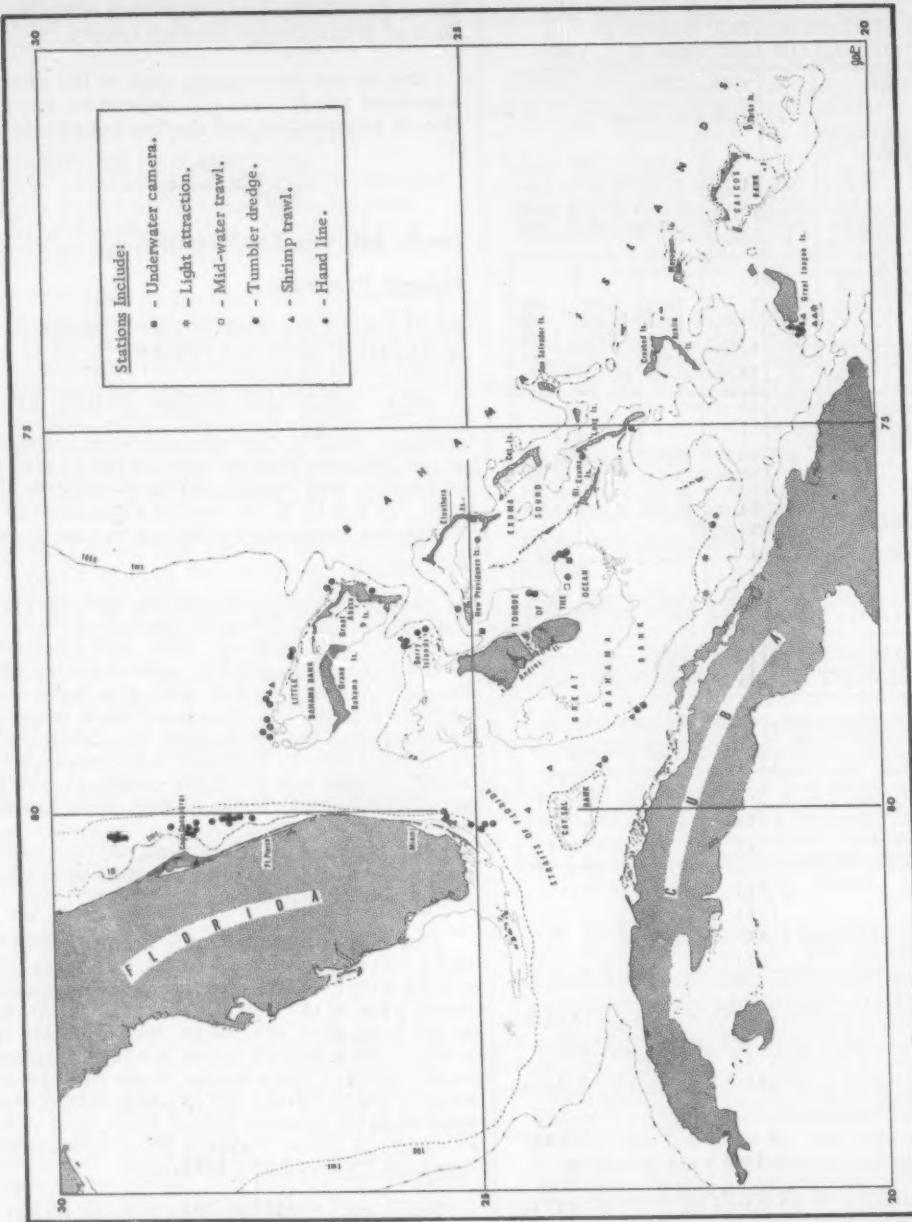
EXPLORATORY FISHING FOR SHRIMP, SCALLOPS, AND SNAPPERS IN SOUTH ATLANTIC:

M/V "Silver Bay" Cruise 34 (Oct. 21-Nov. 13, 1961): A 22-day cruise devoted to shrimp, scallop, and snapper explorations in the Bahama Islands and off the east coast of Florida was completed on November 13, 1961, by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay.

Bottom sounding transects, shrimp trawling, and scallop dredging operations were conducted off the north, east, and south edges of the Bahama Islands in order to evaluate that area as a potential source of deep-water shrimp stocks. Explorations were generally restricted to depths outside the Continental Shelf edge (10-35 fathoms) and revealed that rough bottom and precipitous slope conditions predominate over most of the areas surveyed. Bottom trawling and dredging was extremely limited by the topography and only negligible amounts of small noncommercial species of shrimp were encountered.

Difficult and untrawlable bottom conditions were encountered in the following areas: northern and eastern edge of Little Bahama Bank, east of the Berry Islands, eastern edge of the Tongue of the ocean, eastern edge and west of the southern tip of Eleuthera Island, south end of Exuma Sound, eastern edge and west of the southern tip of Long Island, southwest edge of Acklins Island Bank, and southern edge of Great Bahama Bank between Santo Domingo Cay and Mucaras Reef.

Trawling off the western edge of Great Bahama Bank in the Santaren Channel in depths from 200 to 470 fathoms produced catches of Penaeopsis megalops and Cari-



M/V Silver Bay Cruise 34 (Oct. 23, 1961 to Nov. 13, 1961).

dean shrimp. Catches ranged only up to eight pounds. One royal red shrimp (*Hypermenopenaeus robustus*) was taken in 315 fathoms off the northeast edge of Cay Sal Bank. Catches of up to 34 each 31-35 count (heads-off) pink shrimp (*Penaeus duorarum*) were made in 30-60 fathoms off Carysfort Reef, Florida.

A limited number of snapper hand-line stations in depths ranging from 7 to 30 fathoms resulted in uniformly negative results.

Three and a half hours of trolling in the Old Bahama Channel near Guinchos Cay resulted in the capture of about 245 pounds of fish comprised of the following species: great barracuda (*Sphyraena barracuda*) 27 fish; dolphin (*Coryphaena hippurus*) 4 fish; rainbow runner (*Elagatis bipinnulatus*) 2 fish; little tuna (*Euthynnus alletteratus*) 1 fish; and cero (*Scomberomorus regalis*) 1 fish.

Twenty-four dredging stations were occupied on the Cape Canaveral calico scallop bed to provide samples and specimens for Bureau technologists and biologists.



Tuna

UNITED STATES AND TERRITORIES CANNED PACK AT RECORD HIGH:

As of November 18 for the United States west coast, and as of October 31 for Hawaii, American Samoa, and Puerto Rico, the 1961 tuna pack for those areas totaled 13.1 million standard cases--an increase of 800,000 cases or 7 percent as compared with the previous record pack in 1960 for the same period. The pack in the areas mentioned represented over 95 percent of the total pack in the United States and possessions.

While the 1961 California tuna pack through November 18 of 9.6 million cases was slightly ahead of the 1960 pack for the same period, most of the increase was in the pack of tuna in the Islands.

If for the balance of 1961 the rate of tuna packing kept pace with that during the latter part of 1960, the 1961 pack was expected to approximate a record total of 16 million cases.

YELLOWFIN LANDINGS FROM EASTERN PACIFIC:

Yellowfin tuna landings in the United States and Latin American countries in 1961 (through November 15) from the Eastern Pacific totaled a record 104,000 tons as compared with 95,700 tons during the comparable period of 1960, a gain of 9,100 tons or 10 percent.

The 1961 yellowfin landings to date approximate the former record total landings for all of 1960.

NEW CANNERY AT CAMBRIDGE, MD.:

Construction of a modern tuna cannery is now under way at Cambridge, Md., in a large warehouse purchased from a frozen foods corporation. The tuna cannery, a subsidiary of a large West Coast tuna canning firm, is scheduled to be in operation by April 1962.

Japanese-caught Atlantic tuna will be the principal source of raw fish for the cannery. Frozen tuna will be transshipped directly to Cambridge in refrigerated vessels with a carrying capacity of 600 tons.

A large cold-storage plant, included with the cannery purchase, has a capacity for over 5,000 tons of frozen tuna. The firm expects to can about 6,000 tons of raw tuna during the first year of operation. Canning equipment includes 3 high-speed half-pound lines with the latest automatic filling and closing machines.

About 150 local people will be employed in the cannery at the start of the canning operations.

The canned product will carry the same brand name as marketed by the parent company on the West Coast. The Maryland plant's canned tuna pack will be marketed on the Atlantic seaboard which should result in a saving in transportation costs to the consuming areas as compared with shipments from the West Coast.



United States Commercial Fishery Landings, January-September 1961

United States Commercial Fishery Landings of Certain Species for Periods Shown, 1961 and 1960				
Species	Period	1961 ^{1/}	1960	Total 1960
Anchovies, Calif. ^{2/}	9 mos.	5,100	2,682	3,304
Cod:				
Maine	8 mos.	1,900	2,437	2,897
Boston 3/	9 "	15,900	12,052	15,548
Gloucester 3/ . . .	9 "	2,100	2,392	3,199
Total cod		19,900	16,881	21,644
Crab, king, Alaska .	8 mos.	32,000	20,400	28,570
Haddock:				
Maine	8 mos.	1,900	2,479	3,834
Boston 3/	9 "	65,200	62,122	76,695
Gloucester	9 "	10,900	9,973	12,107
Total haddock		78,000	74,574	92,636
Halibut 4/:				
Alaska	9 mos.	24,500	20,760	21,351
Wash. & Oreg. . . .	9 "	14,100	16,174	16,802
Total halibut		38,600	36,934	38,153
Herring:				
Maine	8 mos.	26,600	105,783	152,327
Alaska	Year	50,000	77,913	77,913
Industrial Fish, Me., & Mass. 5/ . .	9 mos.	37,400	39,565	43,733
Mackerel:				
Jack	9 mos.	43,500	50,156	74,945
Pacific	9 "	25,200	19,496	36,808
Menhaden	10 mos.	2,130,100	1,861,186	1,999,000
Ocean Perch:				
Maine	8 "	55,600	54,773	78,258
Boston	9 "	4,900	983	1,481
Gloucester	9 "	46,600	53,550	61,873
Total ocean perch		107,100	109,262	141,412
Salmon, Alaska	Year	262,500	207,101	207,101
Sardines, Calif.	to Nov. 11	29,500	47,633	57,513
Scallops, sea, New Bedford (meats)	9 mos.	16,000	14,658	19,353
Shrimp (heads-on), South Atlantic & Gulf States	10 mos.	125,600	200,733	236,938
Squid, Calif. 2/	9 mos.	1,400	646	646
Tuna, Calif.	to Nov. 4	280,900	250,410	283,060
Whiting:				
Maine	8 mos.	13,800	10,723	11,123
Boston	9 "	78	397	754
Gloucester	9 "	43,600	51,617	63,112
Total whiting		57,478	62,737	74,989
Total all above items		3,366,873	3,198,760	3,590,045
Others not listed		555,127	514,282	1,366,755
Grand Total		3,922,000	3,713,042	4,956,800

^{1/}Preliminary. ^{2/}Cannery receipts. ^{3/}Landed weight. ^{4/}Dressed weight. ^{5/}Excludes menhaden. Note: The 1960 grand total represents finfish converted to round weight, crustaceans weight in the shell, and mollusks meats only.

Total Landings: Landings of fish and shellfish in the United States during the first 9 months of 1961 were up 209 million pounds, or 6 percent more than during the comparable period of 1960.

Salmon: On the basis of the reported pack of canned salmon, it was estimated that the Alaska catch for the year totalled about 262 million pounds--a gain of 55 million pounds over a year ago.

Shrimp: The South Atlantic and Gulf States landings (126 million pounds) were down 75 million pounds--a drop of 37 percent as compared with the same period in 1960.

Menhaden: Landings during the first 10 months of 1961 amounted to 2,130 million pounds--an increase of 269 million pounds over the previous year. It appears that the 1961 catch will exceed the record 1959 landings of 2,203 million pounds.

Tuna: Landings in California (including transshipments of United States-caught fish from South America) totaled about 281 million pounds to November 4, 1961--up 30 million pounds from the same period in 1960.

Haddock: The 9-months 1961 landings of 78 million pounds were 3.4 million pounds greater than during the same period in 1960.

Halibut: The Alaska, Washington, and Oregon catch through September of 38.6 million pounds was 1.7 million pounds more than in the same period in 1960.

Scallops: New Bedford landings of meats during the first 9 months of 1961 of 16 million pounds exceeded 1960 for the same period by 1.3 million pounds.

Mackerel: Landings of Pacific mackerel (25 million pounds) through September 1961 were 6 million pounds more than those in the previous year, while jack mackerel landings (43.5 million pounds) declined 6.7 million pounds.

Whiting: During the first 9 months of 1961, landings at Gloucester (54 million pounds) were down 8 million pounds as compared with the previous year.



U. S. Fishery Landings

NEAR RECORD COMMERCIAL CATCH IS INDICATED FOR 1961:

A near-record United States commercial fisheries catch in 1961 is indicated by data available in November 1961. Preliminary data point toward a total United States catch of over 5 billion pounds of fish and shellfish for the year. The 1960 catch was estimated at 4.9 billion pounds.

The 1961 catch although larger than in 1960, will be less than the record 5.3 billion pounds taken in 1956, but may equal or exceed the second highest catch of 5.1 billion pounds taken in 1959.

Data for the first 9 months in 1961 show an increase of 209 million pounds (about 6 percent) over the same period of last year. Record catches of menhaden, king crabs and possibly sea scallops, are expected. However, landings of herring, sardines, and shrimp will be far below normal. Menhaden landings of 2,130 million pounds in 1961 show an increase of 269 million pounds over the

1960 catch for the same period. One reason for this increase is a stepped-up fishing effort due to the improved market for fish meal, a menhaden product.



Crab fishing vessels docked at Fishermen's Wharf.

The Alaskan catch of salmon for 1961 totaled about 262 million pounds, a gain of 55 million pounds over 1960. Landings of tuna in California, including shipments of fish caught by United States fishing boats operating off South America, totaled about 281 million pounds from January 1 to November 4. This is up over 30 million pounds from 1960.

Shrimp landings in the South Atlantic and Gulf States in 1961 were down 37 percent. Shrimp fishermen in those States had caught 126 million pounds by the end of October, a drop of 75 million pounds. During the first nine months of 1961, landings of whiting at Gloucester Mass., totaled 44 million pounds, down 8 million pounds when compared with the same period for 1960.

Jack mackerel landings also were lower, but Pacific mackerel, halibut, haddock, and scallops were considerably higher than the 1960 catch over the same period.



U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, SEPTEMBER 1961:

During September 1961, 22 vessels of 5 net tons and over were issued first docu-

ments as fishing craft as compared with 23 in September 1960. The number issued first documents in the first 9 months in 1961 was 6 more than in the same period in 1960.

Table 1 - U. S. Fishing Vessels 1/-Documentation Issued and Cancelled, by Areas, September 1961 With Comparisons

Area (Home Port)	Sept.		Jan.-Sept.		Total
	1961	1960	1961	1960	
..... (Number)					
<u>Issued first documents 2/</u>					
New England	1	1	27	27	35
Middle Atlantic	2	-	11	15	18
Chesapeake	5	8	47	58	78
South Atlantic	6	1	37	43	47
Gulf	4	7	87	71	90
Pacific	4	6	140	129	146
Great Lakes	-	-	11	13	18
Puerto Rico	-	-	2	-	-
Total	22	23	362	356	432
<u>Removed from documentation 3/</u>					
New England	2	2	15	19	22
Middle Atlantic	4	1	21	7	18
Chesapeake	1	2	26	15	21
South Atlantic	2	4	20	26	38
Gulf	7	4	77	72	90
Pacific	8	7	70	58	87
Great Lakes	1	1	16	8	13
Puerto Rico	-	-	-	1	1
Total	25	21	245	206	290

1/For explanation of footnotes, see table 2.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, September 1961

Gross Tonnage	Issued 2/		Cancelled 3/
 (Number)		
5-9	10		6
10-19	2		9
20-29	5		2
30-39	1		2
40-49	1		-
60-69	1		2
70-79	1		2
150-159	-		1
250-259	1		-
320-329	-		1
Total	22		25

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

2/Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 16 in 1961, 1 in 1959, 1 in 1953, 3 prior to 1951, and 1 unknown. Assigned to areas on the basis of their home ports.

3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, SEPTEMBER 1961:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during September 1961 declined 5.9 percent in quantity and 8.7 percent in value as compared with August 1961. The drop was due primarily to smaller imports of all types of frozen fillets, canned tuna and bonito, fresh and frozen salmon, canned sardines not in oil, fresh swordfish from Canada, frozen spiny lobster tails, and sea scallops. Imports were up for frozen tuna, tuna loins and discs, canned salmon, canned sardines in oil, and frozen shrimp.

Compared with September 1960, the imports in September 1961 were down 6.4 percent in quantity but up 1.5 percent in value. The increase in value was due to the higher prices in 1961 for nearly all imported fishery products. The drop in quantity came about because of smaller imports of frozen fillets other than groundfish, frozen tuna other than albacore, canned light meat tuna, fresh and frozen salmon, fresh swordfish from Canada, canned crab meat, frozen and canned lobster and spiny lobster, shrimp, and sea scallops. These declines were not offset by increases in the imports of frozen groundfish fillets, frozen albacore tuna, frozen tuna loins and discs, canned white meat tuna, canned salmon from Japan, canned sardines in oil and not in oil, and sea scallops from Canada.

U. S. Imports and Exports of Edible Fishery Products, September 1961 with Comparisons									
Item	QUANTITY				VALUE				(Millions of \$)
	Sept. 1961	Year 1960	Sept. 1961	Year 1960	Sept. 1961	Year 1960	Sept. 1961	Year 1960	
Imports:									
Fish & shellfish:									
Fresh, frozen, & processed 1/	83.0	88.9	1,011.6	26.3	25.9	304.8			
Exports:									
Fish & shellfish:									
Processed only 1/ (excluding fresh & frozen)	1.3	6.3	48.7	0.7	3.4	19.2			

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in September 1961 were down 23.5 percent in quantity and 22.2 percent in value as compared with August 1961. Compared with the same month in 1960, the exports in September 1961 were down 79.4 percent in both quantity and value. The lower

exports in September 1961 as compared with the same month in 1960 were due to a drop in the exports of canned shrimp, salmon, and California sardines.

IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, JANUARY-SEPTEMBER 1961:

Imports: The imports of groundfish and ocean perch fillets and blocks during January-September 1961 continued to increase, reaching a new high. The largest single category, blocks and slabs, was up 43 percent as compared to the same period in 1960. Canada, Iceland, Norway, and Denmark, the principal suppliers of blocks and slabs, all showed substantial increases. Fillet imports were up 13 percent in the same period.

Fresh and frozen tuna imports dropped 15 percent; although there was a decline in imports from Japan, Trinidad and West Africa shipments were up. Canned tuna in brine imports increased slightly. A large increase in imports of canned albacore or white meat tuna from Japan was counterbalanced by a decline in canned or light meat tuna.

Table 1 - U. S. Imports of Selected Fishery Products, January-September 1960 and 1961

Commodity	Jan.-Sept.	
	1961	1960
	(1,000 Lbs.)	
<u>Groundfish and ocean perch:</u>		
Fillets	58,246	51,592
Blocks and slabs	94,126	65,807
Total	152,472	117,399
<u>Flounder fillets</u>	12,830	13,683
<u>Swordfish</u>	14,067	12,496
<u>Tuna, fresh or frozen:</u>		
Albacore	48,909	48,708
Other than albacore	103,243	129,394
Total	152,152	178,102
<u>Tuna loins and discs</u>	5,785	5,893
<u>Tuna, canned in brine:</u>		
Albacore	22,265	11,847
Other than albacore	19,269	26,288
Total	41,534	38,135
<u>Tuna, canned in oil</u>	344	532
Bonito and yellowtail, canned	8,004	8,205
Crab meat, canned	2,529	3,129
Shrimp (mostly frozen; some canned or dried)	79,175	73,280
Sea scallops, fresh or frozen	6,858	5,549
<u>Lobster, fresh or frozen:</u>		
Northern	17,812	18,463
Spiny	15,362	24,523
Oysters, canned	5,163	4,446
<u>Salmon:</u>		
Fresh or frozen	7,128	7,936
Canned	5,206	13,519
<u>Sardines:</u>		
Canned in oil	17,960	15,373
Canned not in oil	9,355	5,551
Frog legs	1,459	1,965
Fish meal	159,140 (tons)	97,333 (tons)
Fish solubles	2,508 "	2,852 "

Fresh or frozen shrimp imports were up from all major supplying countries; Mexico supplied well over half of total imports. Fresh or frozen lobster or spiny lobster imports were about the same; but increased shipments came from the South Africa Republic, Brazil, Mexico, and the Bahamas while shipments from Canada (northern lobster), New Zealand, Cuba, and Australia declined.

Canned salmon imports from Japan were down 66 percent, resulting in a sharp drop in total canned salmon imports. Fresh and frozen salmon imports declined about 10 percent owing to reduced shipments from Canada.

Norway and Portugal supplied most of the increase in the imports of canned sardines in oil. Imports of canned sardines not in oil from South Africa were up 69 percent. Imports of canned crab meat (mainly from Japan) decreased about 18 percent; canned oysters increased by about the same percentage. Fresh or frozen scallops, imported principally from Canada, were up 24 percent.

Fish meal imports were up 63 percent. Peru doubled the amount it supplied, which was about twice the amount shipped from all other nations combined. Receipts from South Africa, Angola, and Canada also increased considerably while those from Chile declined. Imports of fish solubles declined by 11 percent. Imports of frog legs showed a 26-percent drop, owing mainly to a reduction in receipts from Cuba.

Exports: Exports of canned sardines during the first 9 months of 1961 were about one-third of the amount for the same period in 1960, due primarily to the sharp decline in sales to the Philippines. However, the Philippines and Ecuador continued to be the two leading foreign markets for canned sardines not in oil, taking over one-fourth of the total quantity exported. Exports of canned mackerel increased by 190 percent.

The United Kingdom took 48 percent of the total canned salmon exports, but the total amount was less than half that sold there during the same period in 1960. Other countries continued to increase their purchases of canned salmon. Exports of fresh or frozen salmon to all countries decreased.

Exports of fresh or frozen shrimp were twice those of the same period in 1960. Ex-

Table 2 - U. S. Exports of Selected Fishery Products, January-September 1960 and 1961

Commodity	Jan.-Sept.	
	1961	1960
Fish oils	• (1,000 Lbs.)	• (1,000 Lbs.)
Oysters, shucked	95,375	107,778
	321	334
Salmon:		
Fresh or frozen	750	1,697
Canned	4,743	6,480
Mackerel, canned	2,596	896
Sardines:		
Canned, not in oil	4,463	13,285
Canned, in oil	154	135
Shrimp:		
Frozen	3,602	1,857
Canned	2,009	2,631
Squid, canned	1,109	6,890
Misc. fish, fresh or frozen (mostly freshwater)	2,287	3,588

ports to Japan accounted for the increase. Canada took 36 percent; Japan, 50 percent.

Exports of canned shrimp were down 24 percent, owing to smaller shipments to Canada and the United Kingdom because of a drop in the pack.

A sharp reduction in canned squid exports has resulted from an unfavorable exchange rate in the Philippines. Exports of squid to Greece also decreased markedly.

Fish oil exports were down 12 percent due to sizable reductions in shipments to Sweden, Netherlands, and West Germany. An increase was reported in shipments to Canada, Norway, and certain other countries, but not enough to overcome the large decline in exports to the principal markets of 1960. Peruvian fish oil was reported to be replacing United States oils in the major markets.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which could be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty was 57,114,714 pounds (about 2,720,000 std. cases of 48 7-oz. cans). Any imports in excess of the quota were dutiable at 25 percent ad valorem.

Imports from January 1-October 28, 1961, amounted to 45,545,956 pounds (about 2,168,900 std. cases), according to data compiled by the Bureau of Customs.

Imports in 1960 for the period January 1-October 29 amounted to 41,295,078 pounds (about 1,966,400 std. cases).

Note: Pounds converted to cases at 21 pounds equal 1 std. case of 48 7-oz. cans.

* * * * *

EXPORTS AND RE-EXPORTS OF FROZEN SHRIMP TO JAPAN, JANUARY-AUGUST 1961:

With the increase in the prices of frozen shrimp and the light supplies, shipments to Japan slowed up considerably in August 1961. Of the almost 7.0 million pounds of domestic and foreign fresh and frozen shrimp exported and re-exported from the United States during the first 8 months of 1961, almost 4.9 million pounds were shipped to Japan. A substantial proportion of the shipments to Japan was made from California. Most of the re-exports consisted of shrimp imported into the United States from Mexico.

U. S. Exports and Re-Exports of Fresh and Frozen Shrimp ¹ / to Japan, January-August 1961			
Type of Product	July	August	Jan.-Aug.
Domestic	1,211	243	1,900
Foreign	1,137	254	2,959
Total	2,348	497	4,859

¹Although data appear under the "fresh and frozen shrimp" category, it is believed that all of the exports were frozen shrimp.

Exports and re-exports of shrimp to Japan from California were negligible prior to 1961. But due to a short supply of shrimp in Japan during the first part of 1961 and a strong market, that country has purchased substantial quantities of shrimp from the United States. Most of the Japanese purchases consisted of frozen raw headless brown shrimp, 21-25 shrimp to the pound. But some shipments included 26-30 count, 16-20 count, and under 15 count.

* * * * *

FISHERY IMPORT TRENDS, 1960:

For the first time in 11 years, the value of annual imports of fishery products entering the United States declined. In 1960, the foreign value of imported fishery products totaled \$360,065,000, a decrease of 2 percent from the record high reached in 1959. This value was, however, 82 percent greater than the value of imports in 1950. Edible fishery products were valued at \$307,380,000 and

other fishery products at \$52,685,000. There were declines in both categories.

The United States remained the world's leading importer of fishery products. In 1960, a total of 112 countries shared in the United States market for fishery products. For countries like Japan, fishery products are an important part of their trade with the United States. Mexico earns much of its dollar exchange from its sale of shrimp. Likewise, frozen fish and shellfish in various forms provide considerable dollar exchange for Canada and Iceland.

Trends by Countries: Canada, Japan, and Mexico, the leading suppliers of fishery products to the United States (table 1), accounted for 62 percent of the value of all United States fishery imports. Canada alone provided over 28 percent. Other leading countries in the top ten during 1960 were: Peru, Norway, South Africa Republic, Australia, Iceland, Panama, and Portugal.

Table 1 - Value of U. S. Imports of Fishery Products, by Selected Countries of Origin, 1956-60

Country	1960	1959	1958	1957	1956
Canada	102,878	101,967	107,005	97,404	95,483
Japan	85,256	96,226	84,872	77,202	70,800
Mexico	36,705	32,869	28,005	25,248	27,815
Peru	14,720	16,374	10,907	9,167	7,320
Norway	12,506	16,405	12,087	11,144	13,620
South Africa Rep.	12,030	12,090	9,332	8,554	8,039
Australia	9,839	8,180	7,665	7,766	6,609
Iceland	9,306	10,000	8,775	6,022	6,200
Panama	5,767	6,458	5,852	6,291	4,269
Portugal	5,289	5,452	5,177	5,507	4,907
Ecuador	4,467	4,159	3,510	3,075	2,308
Denmark	4,342	8,239	5,728	3,463	2,887
El Salvador	4,215	1,297	660	60	-
German Fed. Rep.	4,100	1,814	1,805	1,008	1,319
Brazil	3,916	3,002	2,359	2,337	2,976
Cuba	3,901	4,810	5,542	6,282	8,158
Chile	2,630	1,282	2,007	1,130	1,673
Netherlands	2,562	2,628	1,509	2,496	928
India	2,363	2,239	1,547	1,407	1,328
France	2,317	2,230	1,169	1,139	2,273
United Kingdom	1,759	2,388	1,787	1,540	2,033
Angola	267	3,023	2,065	1,046	742
Other	1/29,380	23,368	17,806	18,155	9,510
Total	360,065	366,500	327,171	297,443	281,197

¹/Imports from 90 countries.

Note: Value at the foreign port of shipment.

In 1960, annual imports from a number of countries increased, including those from Mexico, Australia, Brazil, Chile, El Salvador, and West Germany. On the other hand, imports were down from Japan, Norway, Peru, Denmark, Panama, Angola, United Kingdom, and Cuba.

Table 2 - Value of U. S. Imports of Fishery Products from Canada, 1960, by Principal Products

Product	Value US\$1,000
Fresh or frozen:	
Lobster	14,018
Fresh-water fish	11,754
Fish blocks	11,313
Groundfish fillets	10,285
Salmon	6,325
Halibut	5,711
Flounder fillets	5,358
Fresh-water fish fillets	5,671
Other fresh or frozen	11,382
Total fresh and frozen	81,817
Canned lobster	4,382
Fish meal and scrap	3,287
Other fishery products	13,392
Total imports	102,878

Canada: During 1960, Canada was the leading supplier of fishery products to the United States market with products valued at \$102,878,000. This represented a small gain in value over 1959 but still somewhat less than the high reached in 1958. Canada supplies the United States with a wide variety of fishery products. As usual, fresh and frozen fishery products predominated.

Japan: In 1960, the value of fishery imports from Japan was \$85,256,000, about 11 percent less than the 1959 value. Declines in imports of shrimp, salmon, and crab meat contributed to the decrease. Various tuna products continued to be the major part of the trade.

Table 3 - Value of U. S. Imports of Fishery Products from Japan, 1960, by Principal Products

Product	Value US\$1,000
Fresh or frozen:	
Albacore tuna	9,198
Other tuna	11,289
Shrimp	1,880
Swordfish	5,282
Canned:	
Light-meat tuna in brine	10,462
White-meat tuna in brine	5,975
Salmon	7,116
Crab meat	5,461
Pearls, cultivated	13,627
Other	14,966
Total	85,256

Mexico: Mexico ranked third as a supplier of fishery products to the United States. During 1960, Mexico supplied 55 percent of the total value of fresh or frozen shrimp imported into the United States. Mexican shrimp imports were 13 percent greater in 1960 than during 1959. The value of shrimp imports was nearly 6 times that of all other fishery products received from Mexico; fresh or

frozen shrimp, \$31,285,000; other fishery products, \$5,420,000; total \$36,705,000.

Other Countries: In 1960, the principal products of other leading suppliers were:

Country	Product	Value US\$1,000
South Africa Republic	Frozen spiny lobster	9,767
Australia	Frozen spiny lobster	9,147
Iceland	Groundfish fillets & blocks	7,881
Panama	Shrimp, mostly frozen	5,674
Norway	Canned sardines	5,092
Peru	Fish meal	3,899
Portugal	Canned sardines	2,362
Denmark	Frozen fillets & blocks	1,538

Areas of Origin: During 1960, North American countries continued to be the principal sources of supply for fishery products imported into the United States (table 4). A total value of \$158,202,000, or 44 percent of the total imports came from North American sources. Asia was the second leading area of supply. Other continental sources ranked as follows: Europe, South America, Africa, and Oceania.

Table 4 - Value of U. S. Imports of Fishery Products by Area of Origin, 1960

Area	Edible	Other	Total
North America	151,513	6,689	158,202
Asia	69,612	22,237	91,849
Europe	38,319	9,475	47,794
South America	19,126	12,104	31,230
Africa	15,123	1,731	16,854
Oceania	13,687	449	14,136
Total	307,380	52,685	360,065

Note: Value at the foreign port of shipment.

Trends by Commodities: For the seventh consecutive year, the value of United States imports of shrimp increased. Fresh and frozen shrimp was the leading item in the import trade (table 5). Other leading products were: fresh or frozen lobster, fresh or frozen groundfish and ocean perch fillets and blocks, frozen tuna, canned tuna, pearls, fish meal, canned sardines, and canned salmon.

Shrimp: The value of shrimp imports increased 8 percent to \$56,380,000 in 1960. This set a new record for this product. Greater shipments were received from Mexico, El Salvador, British Guiana, Colombia, Egypt, and Iran. There were declines in shipments from Japan, Panama, Ecuador, and India.

Table 5 - Value of U. S. Imports of Fishery Products, by Selected Commodities, 1956-60

Commodity	1960	1959	1958	1957	1956
..... (US\$1,000)					
Edible Products:					
<u>Fresh or Frozen:</u>					
Shrimp	56,380	52,306	43,162	35,415	32,986
Tuna	31,713	29,728	25,377	16,765	15,337
Groundfish fillets and blocks	33,265	38,759	30,431	27,417	25,987
Lobster	44,794	38,635	35,661	36,827	34,285
Other	61,845	60,940	63,243	55,575	50,663
Total fresh or frozen	227,997	220,368	197,874	171,999	159,258
<u>Canned:</u>					
Tuna	19,142	21,688	16,882	17,002	14,998
Salmon	7,541	11,130	11,271	9,470	11,650
Sardines	9,115	8,370	8,564	8,957	7,110
Crab meat	5,514	7,947	6,116	6,254	5,318
Lobster	5,239	6,441	3,952	5,017	5,031
Other	16,067	17,083	15,561	14,645	13,486
Total canned	62,618	72,659	62,346	61,345	57,593
Other edible products	16,765	18,006	19,992	17,612	16,315
<u>Products other than edible:</u>					
Fish meal	11,068	15,884	11,335	9,717	11,518
Pearls	14,563	13,678	10,944	9,989	8,651
Other	27,054	25,905	24,680	26,781	27,862
Total	52,685	55,467	46,959	46,487	48,031
Grand Total	360,065	366,500	327,171	297,443	281,197

Note: Value at the foreign port of shipment.

Lobster: Northern lobster imports, nearly all from Canada, comprised 37 percent of the total lobster imports; spiny lobster made up 63 percent. Almost half of the spiny lobsters came from South Africa Republic, Cuba, and Australia. In 1960, fresh and frozen lobster imports were valued at \$44,794,000, and canned lobster imports at \$5,239,000.

Fresh or Frozen Groundfish and Ocean Perch Fillets and Blocks: Imports in this category declined from \$38,759,000 in 1959 to \$33,265,000 in 1960. Frozen fish blocks constituted 56 percent of the total. Canada, Iceland, Norway, and Denmark were the major suppliers of imported fillets and blocks.

Tuna: In 1960, the value of frozen tuna imports was \$31,713,000; the value of canned tuna, \$19,142,000. Japan supplied 65 percent of the value of the fresh and frozen tuna and 86 percent of the canned tuna. A significant increase occurred in imports of canned tuna from Spain, Portugal, and Peru.

Fish Meal: Imports during 1960 were valued at \$11,068,000. In order of importance, Peru, Canada, Chile, and South Africa Republic were the principal suppliers. Angola, formerly a leading supplier, had a poor production year.

Table 6 - U. S. Duties Collected on Fishery Imports and Average Ad Valorem Equivalent

Year	Duties Collected	Average ad Valorem Equivalent	
		US\$1,000	Percent
1960	15,857	4.3	
1959	17,737	4.8	
1958	16,645	5.1	
1957	15,955	5.4	
1956	15,504	5.5	

Duties Collected: Duties collected on fishery products imported by the United States in 1960 were \$15,857,000, or 11 percent lower than the total collected in 1959. The average ad valorem equivalent of the duties collected has continued to decline over the last several years (table 6).

* * * * *

U. S. COMMERCIAL ATTACHES TO PURSUE EXPORT SALES VIGOROUSLY:

Commercial Attaches at U. S. Missions overseas are going to get more and better backing from the Commerce and State Departments than ever before. However, they will be expected to bolster President Kennedy's Export Expansion Program through new, aggressive efforts to increase sales of United States products in the countries to which they are assigned.

This was the principal emphasis at a five-day conference concluded early in December 1961 in London between 22 commercial officers from U. S. Missions in 17 Western European countries and a delegation of top officials from the Commerce and State Departments. As Under Secretary of Commerce Edward Gudeman, leader of the Washington delegation put it:

"We want new ideas from you. That includes criticisms of existing procedures which aren't producing results or are wasting your time. We're going to try to get things done that you want us to do. I can assure you that we're going to be responsive to your requests as never before."

At the conference were commercial officers representing posts in London, Copenhagen, Reykjavik, Bonn, Madrid, Paris, Oslo, Bern, Brussels, Dublin, Helsinki, The Hague, Vienna, Stockholm, Portugal, Rome, and Belgrade.

The Conference focused its attention on (a) a review of the new responsibilities of

the Commercial officers in promoting the Commerce Department's Expansion Program, (b) details of the Department's new plans and program in the field of international affairs, and (c) the effectiveness of the Department's current services to U. S. businessmen and its export promotion activities.

The new and increasingly important role of the commercial attache in helping to carry out the Department's export expansion drive received special attention in the conference sessions.

Members of the Washington delegation made it clear they are determined to free the commercial attaches from routine tasks to concentrate on making contacts in the business communities of the countries to which they are assigned. This will permit greater opportunity for location of new markets for new products and new ways of selling them. No longer is it sufficient for the commercial officer simply to reply to inquiries from individual businessmen. Instead, the Washington group said, they must take the lead in alerting United States business to new opportunities for sales abroad. In addition, they must be particularly watchful for export opportunities for American businessmen who have never sold in overseas markets before.

The Washington delegation urged the commercial officers to make new and vigorous efforts to help eliminate obstacles to imports of United States products in the countries to which they are assigned. They will be expected to take a "hard sell" approach in behalf of the Commerce Department's export expansion program.



Whaling

U. S. PRODUCTION OF WHALES AND PRODUCTS:

Preliminary 1961 data show that the United States whale catch totaled 316 whales. The whales were taken by 6 whale catcher boats operated by 3 shoreside plants. Two of the plants are at Point San Pablo in San Francisco Bay, Calif., while the third plant is located at Warrenton, Oregon. The Oregon plant started operations in 1961.

The 1961 catch is reported as the best since the rebirth of United States west coast whaling in 1956.

The 1960 total catch of 271 whales was 38 whales, or 12 percent, less than the 1959 catch of 309 whales (see table 1).

Table 1 - U. S. Whale Catch, 1960 and 1959

Species	1960		1959	
	Number		Number	
Blue	1		5	
Bottlenose	2		2	
Fin	138		106	
Humpback	67		140	
Sei	47		39	
Sperm	16		17	
Total	271		309	

By species, the catch of humpback whales declined the most, dropping from 140 in 1959 to 67 in 1960, a decrease of 52 percent. The fin whale catch of 138 in 1960 increased 32 whales over the 1959 catch.

The 1960 production of whale meal, oil, and meat totaled 10.3 million pounds, a decrease of 1.1 million pounds as compared with 1959. The 1960 value of those products totaled \$672,000, a decrease of \$203,000 or 23 percent (see table 2). Depressed prices for meal and oil in 1960 accounted for the large decrease in the value of the products.

Table 2 - U. S. Production of Whale Products, 1960 and 1959

Product	1960		1959	
	1,000 Lbs.	US\$1,000	1,000 Lbs.	US\$1,000
Meal	2,973	135	3,763	263
Meat	4,010	362	3,722	347
Oil:				
Sperm	170	10	171	12
Whale	3,109	165	3,739	253
Total	10,262	672	11,395	875

During both 1959 and 1960 only 2 firms in the San Francisco Bay area engaged in whaling in this country. The red meat of whales is ground up and frozen mostly for use as mink feed. Small quantities are used in the canned pet feed industry.



Wholesale Prices, November 1961

Wholesale prices for edible fish and shellfish in November 1961 were up 2.2 percent from the previous month and 7.3 percent higher than in the same month of 1960, according to the wholesale price index for edible fishery products (fresh, frozen, and canned). There was a steady increase in prices April through November 1961 except for a slight dip in September.

Higher prices in November 1961 than the previous month for whitefish and yellow pike at Chicago and New York City, respectively, more than offset the drop of 8.1 percent in the prices of large drawn fresh haddock at Boston. The drawn, dressed, or whole finfish subgroup during that period was up only slightly. November 1961 prices for the subgroup in general were down 7.5 percent as compared with the same month in 1960. But the movement of the individual items in the sub-



group was mixed. Prices were down substantially for fresh drawn haddock at Boston (down 25.7 percent), frozen king salmon at New York City (down 5.5 percent), and yellow pike at New York City because of greater landings. Those lower prices were more than offset by higher prices for frozen dressed halibut at New York City (up 17.3 percent) and whitefish at Chicago.

Among the processed fresh fish and shellfish prices there was very little change from October to November 1961. Oysters became more plentiful as the season progressed and prices were down slightly. Compared to a year earlier, November 1961 prices for the subgroup were 12.1 percent higher. A 26.0-percent rise in fresh large shrimp prices at New York City and a 5.0-percent rise in prices of shucked oysters at Norfolk were responsible. The increases were partly offset by a drop of 17.1 percent in fresh haddock fillet prices at Boston, which followed the same downward trend as fresh drawn haddock.

Processed frozen fish and shellfish prices in November 1961 were up 2.6 percent from the previous month because of a 6.1-percent increase in small haddock fillet prices at Boston and an increase of 1.7 percent in frozen shrimp prices at Chicago. Compared with a year earlier, the increase for the subgroup was 12.0 percent because lower supplies of frozen shrimp, and haddock and ocean perch fillets caused the prices of those products to rise. However, in that period there was a slight drop in flounder fillet prices.

Canned fishery products prices in November 1961 were up 4.0 percent from the previous month and 10.6 percent from a year earlier. All items in the subgroup were priced substantially higher than a year earlier--canned tuna up 9.5 percent, canned Maine sardines up 44.8 percent, canned California sardines up 27.4 percent, and canned salmon up 9.5 percent. Demand for all canned fishery products has remained steady and in the case of tuna has increased. The 1961 packs of canned tuna and salmon were higher than the previous year, but the packs of California sardines and Maine sardines were down critically.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, November 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1947-49=100)		
			Nov. 1961	Oct. 1961	Nov. 1961	Oct. 1961	Sept. 1961
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)							
Fresh & Frozen Fishery Products:					141.1	138.1	136.9
Drawn, Dressed, or Whole Fish:					154.6	153.0	151.4
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.10	.11	153.0	152.5	150.0
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.35	.35	98.5	107.2	95.2
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.85	.85	108.3	107.3	120.7
Whitefish, L, Superior, drawn, fresh	Chicago	lb.	.83	.69	191.0	191.0	188.2
Yellow pike, L, Michigan & Huron, rnd., fresh	New York	lb.	.48	.45	204.6	171.1	130.2
					111.4	105.5	140.7
Processed, Fresh (Fish & Shellfish):					152.5	150.0	146.4
Fillets, haddock, sml., skin on, 20-lb. tins	Boston	lb.	.34	.32	158.8	158.6	155.7
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.88	.87	115.7	108.9	105.5
Oysters, shucked, standards	Norfolk	gal.	7.88	8.00	138.3	136.7	139.5
					194.9	198.0	140.6
Processed, Frozen (Fish & Shellfish):					194.9	198.0	185.6
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	133.9	130.5	130.9
Haddock, sml., skin on, 1-lb. pkg.	Boston	lb.	.35	.33	100.8	100.8	100.8
Ocean perch, lge., skin on 1-lb. pkg.	Boston	lb.	.30	.30	109.9	103.6	103.6
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.90	.88	120.8	120.8	106.7
					138.1	135.8	118.8
Canned Fishery Products:					138.1	135.8	114.2
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.00	28.00	121.8	117.1	116.4
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	12.15	11.65	146.1	146.1	146.1
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	4.90	4.90	87.6	84.0	82.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	12.31	10.31	114.4	114.4	80.0
					131.0	109.7	110.9
					109.7	109.7	90.5

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.



International

NORTH PACIFIC FISHERIES COMMISSION

COMMISSION MEETING IN JAPAN REVIEWS INTERNATIONAL SALMON RESEARCH:

Biological evidence upon which management of salmon resources of two continents may eventually be based was reviewed by the International North Pacific Fisheries Commission at a meeting in Tokyo, Japan. The sessions began with technical meetings on October 23, 1961, and continued through November 11.

Japan, which harvests salmon on the high seas, and the United States and Canada, which harvest the salmon as they head for the spawning streams, are signatories of the treaty creating the Commission. This treaty became effective in 1953. It provides for comprehensive biological studies of the North Pacific Ocean, particularly the distribution of salmon through that area.

Two stocks of salmon intermingle on the high seas: those which spawn in North American streams and those which spawn in Asian streams. Since the species are the same, a major task for the Commission, and one which called for several years of biological research, was the development of means by which the North American salmon could be differentiated from those of Asian origin. This differentiation is accomplished by serological methods, body measurements, scale inspection, and other means. Distribution studies are being made by exploratory fishing for salmon at 60-mile intervals along a grid covering vast areas of the North Pacific Ocean and Bering Sea. More intensive explorations are made when conditions warrant. The U. S. Bureau of Commercial Fisheries was responsible for the major portion of the biological investigations.

As in previous meetings, reviews of the latest presentations of "evidence for abstention" were high on the agenda of the Tokyo meeting. Under the present treaty, Japan abstains from fishing for salmon east of 175 degrees west longitude, leaving the salmon resources east of that line to Canada and the United States. This principle of "abstention" is relatively new in international law and its application is considered valid only when a fishery resource is being managed in such a way that the annual harvest is the maximum amount consistent with continuing the resource.

The Commission and the fishery scientists are interested in any study related to any intermingling of North American and Asian salmon and the relationship of any such intermingling to the abstention line. American and Canadian scientists are particularly concerned whether the harvesting of fish in the area of intermingling has an appreciable adverse effect on the numbers of salmon reaching the North American fishing areas.

Because of the size of the ocean and the many facets of the investigative programs, there is no indication yet as to when the biological data will be sufficiently conclusive to be acceptable to all concerned.

Closing Comments by Chairman of United States Section:
At the final Plenary Session of the Commission on November 11, 1961, the Chairman of the United States Section made these closing remarks:

"... Our scientists have worked long and well. Their accomplishments have been outstanding. They have done a good job.

"We Commissioners have been faced at this meeting with several problems of critical importance to the North Pacific fisheries. Two of them have been with us for some time. One is new. All are admittedly difficult to solve. How have we dealt with them? Let us review the results of this meeting.

"The Secretary of the Interior of the United States, at our opening session, drew our attention to the problem of the critically small Bristol Bay red salmon run in 1962. The run is expected to be one of the smallest in recent years. United States scientists estimate it at about 9 million fish. If adequate escape to the spawning grounds is to be obtained, severe restrictions will be necessary. The State of Alaska plans to impose the needed regulations on the United States fishery; and in some areas it is possible that complete closure will be necessary. Under the best of circumstances, the American catch will be small. But the success of the severe conservation regime to be imposed upon the inshore fishery and the likelihood of even a minimum economic American fishery will be jeopardized if the high-seas fishery follows a pattern similar to those of 1960 and 1961. Is it not reasonable to expect that the high-seas fishery be similarly restrained? Indeed, restrictions of the utmost severity on the high seas fishery are essential if a disastrous situation is to be avoided.

"What has the Commission done about this problem? It has reaffirmed the resolution on conservation which it adopted at an earlier meeting, and has added certain meaningful phrases to it, drawing attention to the problem. This last is encouraging. The new language suggests, at least, that the 1962 season will be a difficult one. But does this resolution, with the new language, really reflect the critical nature of the problem? We think not, Mr. Chairman. The United States Section has agreed to this general resolution because something is perhaps better than nothing; because we hope that the Governments will read in it what we have been unable to agree to say in it--that a severe conservation regime must be imposed on all fisheries harvesting this run. I wonder how this general resolution will be received by the people of Alaska and the Pacific Coast of the United States whose livelihoods are dependent upon the present and continued productivity of the Bristol Bay run.

"Mr. Udall also spoke of the tremendous growth of bottom fish operations in the Bering Sea and of the threat they would offer to the halibut resource of the eastern Pacific Ocean if they were to be extended into waters south of the Aleutian Islands. He urged us to take cognizance of the problem, to recognize the need for restraint, and to make appropriate recommendations to the Governments. What have we done? We have talked about the problem; exchanged views at length. Beyond this we have done little.

International (Contd.):

"There is reason to fear that the Bering Sea bottom fish operations may expand to the south. Threats of this were heard, I may say, before we came to Tokyo. There is also good reason to believe--we have made some study of the matter, study which is continuing--that if trawlers operate in the waters south and east of the Aleutian Islands on the continental shelf they will catch halibut in substantial quantities, and that they will kill halibut in substantial quantities. The catches may be small in relation to the total catch of other less important species, but, Mr. Chairman, the total catch from Japanese trawling operations alone in the Bering Sea is reported to be in excess of one billion pounds. If the catch to the south is only a fraction of this, the incidental catch and destruction of halibut may be expected to be substantial. We doubt that this would be in accord with the spirit and intent of the Convention.

"As I said, the United States and Canada are conducting an extensive joint study of the distribution of halibut in relation to the distribution of other bottom fish in the waters south and east of the Aleutian Islands. At this meeting we have urged the Commission to recommend to the Governments that the expansion of bottom fish operations to this area be delayed until this study has progressed further; and until we are in a position to evaluate the effect of trawl operations upon the halibut resource. This is a minimum of action. This is only prudent. The Commission has not adopted such a recommendation. Indeed, the Commission can hardly be said to have recognized the critical nature of the problem. Is this responsible action on the part of a Commission charged with the conservation of North Pacific fishery resources?

"The Commission has made somewhat more progress in other fields. We in the United States have for some time been concerned over the fact that the Commission's scientists have not been able to make full use of the statistical and biological data being obtained in the Japanese salmon fleets. We have considered that these data would make a major contribution to the Commission's studies related to the Protocol. Some data have been made available in the past, but they have constituted only a small part of what is needed in that connection. We are gratified to learn that Japan will be able to supply more information in the future as a routine matter. We are disappointed to learn, however, that these data will be grouped in such large geographic units and in such long time periods as to reduce materially their usefulness. We believe that all members of the Commission have an obligation to furnish pertinent information in the most useful form practicable. We earnestly hope that Japan will find it possible to supply data in greater detail as time goes on.

"The record of this meeting--in the light of the critical problems requiring attention and resolution--is not one to be especially proud of, Mr. Chairman. At our opening session I expressed the confidence of the United States that the Commission's deliberations at this meeting would demonstrate it to be worthy of the trust reposed in it by our Governments and our peoples. I am frank to say that that confidence has been shaken--not destroyed, but certainly shaken.

"We hope, we believe that upon reflection all of us--and our Governments--will recognize the critical nature of these problems, and, in the months immediately ahead, give further thoughtful consideration to them. . . ."

* * * * *

**INTERIOR SECRETARY UDALL
ADDRESSED NATIONAL
MEETING IN TOKYO:**

The Eighth Annual Meeting of the International North Pacific Fisheries Commission began in Tokyo, Japan, with

technical meetings on October 23 and continued through November 11, 1961. At the opening plenary session on November 6, U. S. Secretary of the Interior Stewart L. Udall addressed the meeting as follows:

"I want to thank Minister Kono for his warm words of welcome and the people of Japan for the most gracious hospitality extended to Mrs. Udall and me during our stay in your beautiful country. In our brief visit we have established friendships that will deepen with the passing of time, and we look forward to a renewal of the valuable contacts which have given us such new insight into the resource development opportunities and problems of the Japanese people.

"My prime responsibility as a Cabinet Officer of the United States Government lies in concern over the conservation and wise use of natural resources. The conservation philosophy of President Kennedy and his administration is an enlargement of the philosophy of a great American of this century who was also a great friend of the Japanese people--President Theodore Roosevelt.

"The very essence of the conservation thinking of these two Presidents is that the welfare of future generations should have a paramount place in resource planning. Indeed, I believe I can state flatly that all three of the Governments represented here today would reject out of hand any proposal that today's standard of living be enhanced at the expense of those who must look to our common resources for sustenance tomorrow.

"This is a conservation conference--and the treaty document that has brought us to this table represents a search for sound principles with which to manage important living resources of the sea. It is the hope of my Government that these deliberations will serve to advance the solution of the complex problems we confront.

"The rapid growth of world populations is creating a steadily increasing demand for food; and the expansion of fishing into all areas of the world, with rapid development of fishing technology, poses a special challenge to fishing nations to cooperate in renewing our world fishery resources. Therefore, it is vital that our fishery conservation commissions make a strenuous attempt to develop facts and scientific data which will enable us to build the foundations of a lasting program.

"Bearing in mind the complex problems which confront us in the North Pacific, my country takes considerable satisfaction in the progress we have made. While some of the terms of the Convention may need clarification to resolve problems which have developed, the United States does consider that thus far the agreement has provided a workable basis for dealing with most of the varied fishery problems in the North Pacific Ocean. We are confident it will become more effective as the Commission enlarges its knowledge of the important stocks of fish in the area, and develops techniques which will give adequate protection to the legitimate interests of the parties to the Convention.

"In many respects the work of this Commission has reflected great credit on those at the conference table today. Your scientific fact-finding investigations have been outstanding. Due to your work the distribution and movements of salmon in the North Pacific--which could only be guessed at ten years ago--are now in large measure defined. You can take pride in the advances in knowledge resulting from your work.

"However, Mr. Chairman, research is a means to an end, not an end in itself. The knowledge which you have obtained must now be applied to the pressing problems which confront you.

"Let me touch briefly upon a few of them.

"Your scientific studies have shown beyond doubt that the red salmon which spawns in the Bristol Bay area of Alaska migrate widely in the North Pacific Ocean. They inter-

International (Contd.):

mingle there with salmon from Asian streams. Because of these circumstances they have become subject to a Japanese fishery. Later, as they approach the spawning streams, these salmon enter the severely regulated United States fishery in the territorial waters of Alaska. This intermingling creates a critical problem--one foreseen in the Protocol to the Convention. Your attempts to solve this problem equitably have been hampered by divergent interpretations of the Protocol. I am confident that in the end you will work out a wise and equitable solution. But, in the meantime, some measures must be taken to meet the immediate problem. In 1962 the situation will be especially critical. The runs are expected to be only a fraction of the runs of 1960 and 1961. It will be difficult to assure that adequate fish reach their spawning grounds so that this fishery upon which the Bristol Bay region of Alaska is so dependent will be maintained. Clearly, restraint is called for. This is a prime consideration of my Government and I must candidly express our concern over it.

"Mr. Chairman, your Commission faces a new and serious problem. Substantial bottomfish operations are already under way in the Bering Sea. If these operations expand into waters to the south, they will jeopardize the conservation of the halibut resources of the eastern North Pacific Ocean. While it is perhaps not the responsibility of this Commission to seek a final solution to this problem, the Commission must, in our judgment, consider what can be done within the scope of its powers to insure the future of this resource. It seems appropriate that the Commission take cognizance of the problem, recognize the need for restraint, and make appropriate recommendations to our Government.

"These examples, Mr. Chairman, serve to illustrate the problems which we face together in the North Pacific. Cooperation, patience, and sympathetic consideration of each other's interests are needed.

"The challenge before us is a part of the much larger problem facing mankind today--how to utilize the food resources of our globe for the betterment of all. Specifically the challenge is first to manage our highly valued fisheries so as to make them produce for us today. Secondly we must establish principles of sound management for the long run so that our peoples will continue to enjoy the fruits of these fisheries in the future."

NORTHWEST PACIFIC FISHERIES COMMISSION

SOVIET-JAPANESE FISHERY MEETING IN MOSCOW:

The Northwest Pacific Fisheries Commission Science and Technology Subcommittee scheduled a technical meeting of fishery experts to be held in Moscow beginning November 27, 1961. The condition of the salmon, crab, and herring resources in the northwest Pacific area will be discussed.

The Japanese delegates to the meeting were announced in mid-November. The Japanese Fishery Agency was planning to send its Production Division Chief and Laboratory Director of the Inland Sea Regional Fisheries Research Laboratory to the meeting. In addition, a number of industry representatives were designated as delegates to the meeting.

The Japanese fishery experts will negotiate with Russian fishery experts on the preservation and catches of salmon in the North Pacific. These negotiations are designed to lay the groundwork for the annual Soviet-Japan fishery talks scheduled to take place in Moscow in February 1962 to establish salmon catch quotas for the North Pacific. The purpose of the preliminary discussions is to shorten the period of negotiations at the Sixth Annual Meeting of the Commission. (Shin Suisan Shimbun Sokuho, November 14, 1961; United States Embassy, Tokyo, report of November 17, 1961.)

FOOD AND AGRICULTURE ORGANIZATION

COUNCIL AND CONFERENCE MEETINGS:

The world food situation and ways to improve it were discussed when the Council and Conference of the Food Agriculture Organization of the United Nations met.



The Conference of FAO, which meets every second year, held its 11th session to review the work of the past two years and to approve the program and set the budget for the organization's 1962/63 biennium. It met November 4-23, 1961. Deliberations were preceded by an October 30 to November 3 session of the Council, the body which governs FAO between Conference sessions, and by meetings from October 30 to November 10 of the Conference's own technical committees on the specific technical activities included in the over-all program of work.

The Council supervises the work of the FAO, reviews the world food and agriculture situation, and makes recommendations to member governments and other international bodies on measures to improve the food and agriculture organization.

Behind the delegates' discussions on particular subjects was the broad picture of the world food and agricultural situation. The FAO annual report, "The State of Food and Agriculture, 1961," showed that after a succession of two or three good years when food production had moved ahead of population, the increase in production in 1960/61 had been less than the increase in the number of mouths to be fed. Indications are that the production rise in 1961/62 might not be much greater. A statement containing more up-to-

International (Contd.):

date information on recent crop developments was presented to the Conference.

The Conference is the chief legislative body of the FAO and normally meets biennially. The chief aims of the Organization, as expressed through the Conference, are to raise levels of nutrition and standards of living, secure improvements in the efficiency of the production and distribution of all food and agricultural products, and better the condition of rural populations. Its membership consists of 82 nations.

MARINE OILS

ESTIMATED WORLD PRODUCTION, 1956-62;

Since 1950, there has been a steady increase in the world production of marine oils (including whale and sperm whale oils and fish and fish liver oils).

Estimated World Production of Marine Oils ^{1/} , Average 1950-54, Annual 1956-62							
1962/	1961/	1960	1959	1958	1957	1956	Average 1950-54
(1,000 Short Tons)							
1,265	1,250	1,110	1,120	1,085	1,035	1,110	990
1/Whale, sperm whale, fish, and fish-liver oils.							
2/Forecast.							
3/Partly forecast.							
Source: Excerpted from <u>Fats and Oils Situation</u> , November 1961, FCS-210, Economic Research Service, U. S. Department of Agriculture, Washington, D. C.							

The 1962 production is forecast as slightly greater than in 1961, which in turn is expected to be 140 short tons more than in 1960.

WHALING

NO AGREEMENT ON DISTRIBUTION OF ANTARCTIC WHALE CATCH:

Member countries of the International Whaling Commission have been unable to agree on the distribution of the Antarctic whale catch for the 1961/62 season. The Commission sets the total catch quota, but the participating countries (the U. S. S. R., Japan, Norway, the Netherlands, and the United Kingdom) are responsible for devising a formula to divide the quota. A scheduled meeting of the whaling nations was cancelled when the U. S. S. R. did not respond to invitations from Japan and the United Kingdom. (U. S. Embassy, Tokyo, September 1, 1961.)

* * * * *

NORWEGIAN EXPEDITIONS OFF TO ANTARCTIC GROUNDS:

All of the Norwegian whaling expeditions, which include 7 factory vessels and 71 catchers, early in November 1961 sailed for the Antarctic, where the 1961/62 pelagic season started December 12. The total Norwegian quota, decided by the Government, is 5,100 so-called blue-whale units. Last season, Norway had 8 expeditions, which were assigned a quota of 5,800 units. However, 700 units were lost when the Kosmos III fleet was sold to Japan. Norway will operate with one more catcher than the same fleets operated in the 1960/61 season. Also the current season opened 16 days earlier than the previous season.

This season, about 4,630 Norwegians will man Norwegian and British expeditions in the Antarctic, as against 5,377 in 1960/61 and 6,152 in 1959/60. Altogether 3,515 work aboard Norwegian whaling vessels as against 3,985 last season. But, despite the reduction in crews, whaling companies have had a hard time manning their ships. With plenty of job opportunities at home, Norwegians are less attracted by far-off Antarctic.

Norwegian expeditions which participated in the 1960/61 Antarctic whaling produced 124,246 metric tons of whale oil as against 109,834 tons in 1959/60. The Norwegian whale oil production was valued at about Kr. 180 million (US\$25.2 million), plus about Kr. 20 million (US\$2.8 million) for byproducts from processing plants in Norway. (News of Norway, November 9, 1961.)

OCEANOGRAPHY

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION ADOPTS RESOLUTION:

UNESCO's Intergovernmental Oceanographic Commission at its organizational meeting in Paris, October 19-27, 1961, gave fisheries a good deal of attention.

The Commission adopted a resolution which stated in part "... that oceanographic and fishery research are complementary undertakings and that the Food and Agriculture Organization of the United Nations has the primary responsibility within the United Nations family for fisheries;" and further "... that the Food and Agriculture Organization plans to consider at its forthcoming Conference the establishment of an Advisory Committee on Marine Resources Research."

International (Contd.):

The Intergovernmental Oceanographic Commission, established by the U. N. to promote scientific oceanographic cooperation and to work for the exchange of oceanographic data on a world-wide basis, had some 39 nations in attendance at its first meeting.

The Commission officially requested its members to submit views at its meeting next year in regard to establishing advisory channels in the field of oceanography, including fishery matters.



Australia

AUSTRALIAN FIRM OFFERS TO SELL FISH CANNERIES TO JAPANESE:

An Australian company early in November 1961 approached the Japanese Overseas Fisheries Cooperative with an offer to sell two fish canneries in Australia to Japan. Of the two canneries offered for sale, one cannery with an annual processing capacity of 1,000 metric tons of fish (salmon trout, tuna, and sardines) is located in Melbourne. The other cannery is located on the east coast between Victoria and New South Wales. This plant can process 2,000 metric tons of fish annually.

The sale of the plants would be subject to certain conditions. For example, the purchaser must employ Australian nationals in the canneries. The two canneries now primarily pack sardines and salmon trout. (Suisan Keizai Shimbun, November 3, 1961.)



Canada

BRITISH COLUMBIA HERRING FLEET TIED-UP IN EX-VESSEL PRICE DISPUTE:

The British Columbia herring fishing fleet of 78 purse seiners (operated by reduction plants) has been tied up since October 16, 1961, in an ex-vessel price dispute. But about 15 purse seiners operated by a fishermen's cooperative do not bargain for herring prices and were reported fishing as of mid-November 1961.

The fishermen's union officials at Vancouver, B. C., were asking \$13.00 per ton for reduction herring, an increase of 48 percent above the previous price of \$8.80 per ton. The plant operators countered with an offer of \$9.60 per ton, on the basis that this price represents the current

market price improvement over the 1960 ex-vessel price of \$8.80 per ton.

At a meeting between the price negotiators on October 19, a fishermen's union officer announced that the union membership had rejected the plant operators' price offer of \$9.60 as well as the other proposals. As of the end of October, no further meetings had been scheduled, and according to industry sources the tie-up could last all winter.

The current herring fleet price dispute tie-up is the sixth in nine years, reported as follows: 1952/53 - entire fall and winter season; 1955 - start of season to November 5; 1956 - start of season to December 2; 1957/58 - entire fall and winter season; 1959 - May 1 to October 7; and 1961 - October 16 to ?.

During the period of 1952 to date, British Columbia herring fish meal (generally consists of 70 percent protein) prices have fluctuated widely, from a high of \$2.30 per unit of protein to a low of \$1.30 late in 1960. This represents a range of \$1.61 to \$9.1 per ton of herring meal, nearly all downward. As of October 18, the British Columbia herring meal price was \$1.85 per protein unit or \$128.50 per ton, U. S. funds, in paper bags, f.o.b. Vancouver, B. C.

Herring oil has also shown a sharp downward price trend in recent years, from 9.75 cents per pound in the 1956/57 season to a September 1961 low of 6 cents per pound, or a decrease of 33.75 cents per Imperial gallon. It was reported that 60 cars of British Columbia herring oil were sold in the week of September 18 at 6 cents a pound. This very low price on British Columbia herring oil was the result of heavy production of fish and marine oils throughout the world. Icelandic herring oil was being landed in eastern Canada at low prices and the Fisheries Association of British Columbia understood approximately 4,000 tons were sold in Toronto, normally a good market for British Columbia herring oil. In order not to lose the market completely to Iceland, British Columbia producers were forced to reduce their prices to the competitive level of 6 cents per pound f.o.b. Vancouver.

The other demands of the union were: (1) a one-year contract; (2) seine boat operation only (if packers are used a separate agreement must be negotiated); (3) \$16 a ton for herring used for canning, salting, etc. (no change in this price from previous agreement). The plant owners, on the other hand, in addition to the price proposal asked for: (1) a three-week Christmas holiday instead of four weeks; (2) fishing crews wishing to use scows or barges should be permitted to do so where such equipment is available; (3) there be some clarification as to the responsibilities of both parties in the preparation, use, and care of herring seines.

The herring fleet had been receiving \$13.00 per ton in 1959, but in November 1960, eleven months after a sharp decline in world herring oil prices had forced the closure of reduction plants, the Union agreed to resumption of fishing at the current price of \$8.80 per ton.

Note: Ex-vessel prices paid in British Columbia are not comparable to those paid in the United States since it is believed that plants own the vessels and gear and may provide for some of the expenses.

* * * * *

BRITISH COLUMBIA HERRING FLEET PRICE AGREEMENT:

An agreement on the fishermen's price for herring delivered to reduction plants of \$10.40 per ton was reached on November 21, 1961, between herring purse-seine fleet fishermen and reduction plant operators in British Columbia. This is an increase of \$1.60 per ton or 18 percent more than the previous price of \$8.80 per ton, paid prior to the fleet

Canada (Contd.):

tie-up on October 16. At that time the fishermen had asked for a price of \$13.00 per ton, and the reduction plant operators countered with an offer of \$9.60 per ton. The agreement ended a 36-day price dispute tie-up (started on October 16, 1961) for most of the British Columbia herring fleet.

The fishermen's price paid for reduction herring is not comparable with United States ex-vessel prices, since the British Columbia plant operators own the vessels and gear and provide for most of the operating expenses.

The price paid British Columbia fishermen for herring to be made into fish meal and oil is divided equally between all crew members (usually 8 persons) including the captain, on a per-ton basis. The only deduction made is for food. In addition to the fishermen's price, the reduction plant operators pay the captains a bonus equivalent to one crew share or \$1.30 per ton, based on the price of \$10.40 per ton.

The landed or ex-vessel price of British Columbia reduction herring after the recent increase was reported between \$20-\$21 per ton which would be comparable with United States ex-vessel reduction fish prices.

* * * * *

**BRITISH COLUMBIA DOGFISH LIVER
SUBSIDY TERMINATED
NOVEMBER 6, 1961:**

The Canadian Department of Fisheries has announced that the British Columbia dogfish liver subsidy of 12 cents per pound was terminated on November 6, 1961. The announcement stated that the \$150,000 earmarked by the Government to cover the subsidy program for the fiscal year ending March 31, 1962, had been used up by November 6.

Fishermen were reported asking the Department for an additional \$150,000 allotment for the continuation of the subsidy program until March 31, 1962. The Department in Ottawa was reportedly giving consideration to a possible modified dogfish program if additional funds are made available.

At the end of the previous fiscal year (ending March 31, 1961), 990,169 pounds of dogfish livers were landed in British Columbia,

but fishing for dogfish under the subsidy allotment of \$150,000 did not begin until October 1960 that fiscal year. On the other hand, the subsidy allotment for the 1961/62 fiscal year was made early in the year and fishing for dogfish started early in the year.

* * * * *

**BRITISH COLUMBIA WHALING INDUSTRY
TO RESUME IN APRIL 1962:**

After a two-year closure, Canada's British Columbia whaling industry will be resumed in April 1962.

The decision to resume whaling, which was shut down in 1959 because of high cost of operations and poor world prices for meal and oil, resulted from a merger of a Japanese and British Columbia firm. Under the partnership formed, the whale meat will be processed for human consumption and shipped to Japan. It is also expected that by-products will be sold in North America for mink and pet food. Previously, the whale meat was processed into meal and oil which was unprofitable.

The new Canadian-Japanese operation is expected to produce \$1.5 million per year in the form of jobs, sales, and secondary effects on other enterprises. A total of 170 jobs will be created with 70 on the tenders and 100 shoreworkers. (United States Consulate, Vancouver, November 1, 1961.)

* * * * *

**NEW BRUNSWICK FISH MEAL PRICES,
OCTOBER 1961:**

Fish-meal prices (60-percent protein) quoted by New Brunswick producers late in October 1961 averaged about C\$120 a short ton (\$2.00 a protein unit) for both exports and domestic sales. The price has remained the same since late July 1961.

* * * * *

**FISHERMEN'S COOPERATIVE
ASSOCIATIONS:**

On July 31, 1960, there were 80 fishermen's cooperative associations in Canada, compared with 77 on July 31, 1959. Since the latter date, membership declined from 12,000 to about 10,000. The value of fishery products marketed through the cooperatives exceeded \$20 million during the 1960 season, down about \$1 million from the previous sea-

Canada (Contd.):

son. Total assets rose from \$11.6 million to \$12.3 million. The associations' liabilities to the public increased from \$5.1 million in 1959 to \$6.3 million in 1960. However, liabilities to members declined from \$3.3 million to \$2.6 million during the same period.

Quebec, with 28, reported the largest number of fishery cooperatives. British Columbia led in value of catch with \$6.2 million.



Chile

SOUTH AFRICAN COMPANIES MOVE INTO CHILEAN FISHING INDUSTRY:

A South African group of fishing companies (one of the well-known and well-established groups of fishing companies in South Africa and South-West Africa) has announced its intentions to enter the Chilean fishing industry in 1962. The company plans to build a fish meal plant at Iquique in northern Chile. A new company will be registered in that country and a fleet of purse seiners, similar to the pilchard boats used off South Africa and South-West Africa, will be purchased from Chilean boatyards.

The Managing Director of the group was expected to fly to Santiago early in November 1961 for an on-the-spot inspection of the situation. The group will probably purchase its boats from the Chilean subsidiary of a Seattle, Wash., marine construction company. This apparently had not been settled, but it is his understanding that, under Chilean law, the boats must be built there to operate in Chile's coastal waters.

The new plant in Chile will be built by a South African engineering firm. The Managing Director of that firm early in November left Cape Town for Santiago, Chile, and was also expected to visit Lima, Peru. The same company hopes to build fishing industry plants in both countries.

UNITED STATES FIRM INVESTING IN CHILE'S FISHING INDUSTRY:

The General Manager of a Chilean-based company owned by a Seattle, Wash., marine construction firm has a number of fishery activities in Iquique, Chile.

The Chilean-based firm manages a fleet of three small fishing vessels with a capacity of about 50 tons each. This part of the operation is called "commercial exploratory fishing" and has been quite successful to date (October 31, 1961). The General Manager feels that his boats have definitely proven the superiority of well-equipped and well-managed vessels over the typical boat found in Iquique. He also pointed out that this operational fleet, which has been in operation about one year, has been an effective "traveling advertisement" for the shipyard.

The shipyard operation consists of a production-line boat-building plant set up on the outer mole of Iquique Harbor to build stock fishing vessels. The first keel was laid in July 1961 and the third keel was expected to be laid sometime after October 1961. It was estimated that the first hull was to be launched in late November or early December, and that thereafter one hull will be launched approximately every month.

The Seattle parent company does engineering consulting in such areas as fishing plants, installations, etc. Early in 1961 a study was completed for CORFO (Government Development Corporation) which indicated the feasibility of installing an integrated fish-process plant in Iquique. CORFO has now taken the first steps in this respect by forming a fishery firm in Tarapaca.

The fishing industry in northern Chile represents a potentially rich and relatively undeveloped natural resource. In recognition of this and in an effort to offset economic disruption caused by the decline of the natural nitrate industry, the Government of Chile has adopted measures to stimulate and attract capital for the fishing industry in northern Chile.

The fact that American capital is being invested in Iquique's fishing industry indicates the potential of the new development policy. Over a period of time the equipment and techniques now being introduced should bring increased catches and development of the fish-processing industry. (October 30, 1961, report from United States Consulate, Antofagasta.)



Denmark

FISH FILLETS AND BLOCKS AND FISHERY BYPRODUCTS EXPORTS, JANUARY-SEPTEMBER 1961:

Denmark exported 7.1 million pounds of fresh and frozen fish fillets and blocks during September 1961—almost 2.9 million pounds more than in September 1960. Only 378,000 pounds, mostly cod and related species, were shipped to the United States in September 1961.

From January through September 1961, Denmark shipped 9.5 million pounds of frozen fish fillets and blocks to the United States, again mostly cod and related species.

Total Danish exports of fresh and frozen fillets and blocks January-September 1961 amounted to almost 54.0 million pounds, an increase of 17.0 million pounds over the same period in 1960. Exports of fillets and blocks of cod and related species increased by 25.7 percent, and flounder and sole exports were up 28.5 percent.

Product	September		Jan.-Sept.		
	1961		1960		
 (1,000 Lbs)				
Edible Products:					
Fillets and blocks:					
Cod and related species	1,484	1,582	25,880	20,596	
Flounder and sole	3,996	2,466	19,608	15,260	
Herring	1,594	-	7,582	-	
Other	40	2/171	927	2,095	
Total	7,114	4,219	53,997	36,951	
Industrial Products:					
Fish meal, solubles, & similar products (Short Tons)				
	5,957	1,897	39,491	29,515	

¹/Shipments from the Faroe Islands and Greenland direct to foreign countries not included.

²/Includes herring fillets.

Denmark's exports of fish meal, fish solubles, and other similar products rose from 1,897 short tons in September 1960 to 5,957 tons in September 1961. Exports of those products for the first nine months of 1961 were 33.8 percent greater than for the same period in 1960.



Fiji Islands

JAPANESE TUNA BASE PLANNED:

The proposed establishment of a Japanese tuna base at Levuka, Fiji Islands, under the plan initiated by a Japanese Liberal Democratic Party member is making steady progress. On November 10, 1961, a general meeting to formally organize the South Pacific Ocean Tuna Fishing Cooperative was held, at which time February 1963 was set as the target date for commencing operations.

Under a four-year plan, the Cooperative will start fishing operations in the first year with

25 65-ton vessels¹ and eventually increase the fleet to a total of 100 vessels, at the rate of 25 vessels a year. All catches made by the fleet are to be delivered to a canning company in Levuka, a joint British-Japanese enterprise formed in August 1961 with a capital of 300 million yen (US\$833,000), with each country investing 50 percent.

The Cooperative is to be operated as a self-supporting enterprise and plans call for the emigration of Japanese fishermen to the Fiji Islands. Fishing licenses would be issued to the Cooperative but not to individual vessel owners. These licenses would eventually be transferred to vessel owners. As investors, vessel owners will share in the profits of the Cooperative in proportion to the production of their vessels but will not participate in its management. The head office of the Cooperative is to be located in Tokyo and a branch office established in Levuka.

The above plan to establish a base at Levuka is reported to have been formulated to help the struggling medium and small fishing cooperatives of Japan; however, it is strongly opposed by the three largest Japanese fishing companies which operate tuna mothership fleets in the South Pacific. These three tuna mothership companies fear that the establishment of a tuna base in the Fiji Islands would not only jeopardize the operation of their fleets, but an increase in fishing intensity would result in overfishing and eventually deplete the tuna resources in the area. (Suisan Keizai Shim bun, November 11, 1961.)

¹/Earlier press reports indicated that this base would be established under a five-year plan with 20 vessels a year to be assigned to it.



German Federal Republic

NEW FISH REDUCTION METHOD TESTED SUCCESSFULLY:

A new German fish reduction method involving the use of electrophoresis and electrostriction to remove the cellular fluids from the tissue of fish and fish offal has been developed by the German inventor Heinz Doeverspeck in Bremen, according to a United States Consulate report of November 20, 1961, from Bremen. The new method obviates the need for external heat, and permits the extraction of oil and raw protein at temperatures of not over 45 degrees centigrade (113° F.).

The following advantages of the new procedure have been claimed by the inventor: (a) vitamins and essential amino and fatty acids, which are destroyed to a large extent by the conventional cooking process, are

German Federal Republic (Contd.):

saved; (b) the oil obtained under the new method remains fully emulsive; (c) extraction costs may be reduced about 30 percent; (d) the yield of fish oil is about 2-3 percent higher than under the conventional extraction method, while that of meal is about 10 percent higher; (e) "by-taste" of fish is avoided when fish meal produced by the new method is used in meat, egg, and milk production; (f) the required plant can be built from commercially-available equipment, requires about 50 percent less space than conventional plants, and can be installed aboard fishing boats and even on trucks; (g) the generation of undesirable odors is practically eliminated as the result of the low processing temperatures.

In cooperation with the largest West German trawler and fish processing company, the inventor has been conducting large-scale tests for the reduction of fish and fish offal in Bremerhaven during the past few months.

Since the inventor has now applied for patents on his invention in the United States, he is interested in establishing contacts for the utilization of his invention in the United States. He has no definite ideas on the form of utilization which he would prefer. He has entered into an informal understanding with a leading United States producer of fish oil and meal that he will give priority consideration of any offer made by the latter for his invention, if such offer matches or exceeds offers from other United States interests. Interested parties are invited to communicate with the inventor directly.

* * * * *

FISH MEAL PRICES, NOVEMBER 3, 1961:

Prices reported at Hamburg Commodity Exchange as of November 3, 1961, for fish meal delivered ex-Hamburg warehouse, or c. & f. West German sea port were as follows:

Type of Fish Meal	Protein Content (%)	Delivery	DM/Metric Ton 1/	US\$/Short Ton
German	50-55	loco/ prompt	547.50	124.17
"	55-60	" "	557.50	126.44
"	60-65	" "	575.00	130.41
" std. brands	60-65	Nov. 1961	618.50	140.28
" herring	64-68	prompt/Nov. 1961 2/	640.00	145.15
Peruvian	65-70	prompt/Dec. 1961	535.00	121.34
"	65-70	Jan.-July 1962	532.50	120.77
Angola	65-70	loco	592.50	134.38
"	65-70	Nov. 1961/Jan. 1962	585.00	132.68
Portuguese	50-55	Nov.-Dec. 1961	542.50	123.04
Icelandic herring	70-75	Nov. 1961	675.00	153.09
South African	65-70	Dec. 1961	580.00	131.54
"	65-70	Jan.-Apr. 1962	560.00	127.01

1/Values converted at rate of 4.0 deutsche marks equal US\$.
 2/Delivered coastal location.

Note: "Loco" means where and as it is at the time of sale, and all subsequent expenses to be at buyer's account.

Thus far, the capacity of the plant has successfully been tested at a throughput of about 2,500 pounds of raw material per hour. It is expected that this quantity can be increased without difficulty to about 3,500 pounds in the near future.

The inventor stated further that feed tests conducted by chicken farms with fish meal produced by his new method showed that even though the raw protein content of the feed was reduced 50 percent, egg production rose 10 percent because of the superior quality of the fish meal. The new method can also be applied to the processing of meat and oil fruits (olives, papaya, coconuts, etc.). In the opinion of the inventor, the complete absence of odor would make his products, particularly fish flour, suitable for use in those countries where the consumption of animal protein foods meets with religious prejudice. Another promising field of application was seen by the inventor in dairying and animal husbandry. After the separation of butter from milk, the remaining product could be reduced to powder for long-term storage and/or transport to remote destinations, where it could be reconstituted into high-quality milk by the addition of odorless, fully emulsive meat fats produced by the new method. Such reconstituted milk could also be used for cattle feed, particularly calves, and possibly open new fields for using the surplus West European production of skimmed milk and meat fats. The inventor is exploring the possibilities of using his invention in this field with a leading West German lard importer and processor. The application of his invention to the extraction of vegetable oils is being tested by the Spanish Institutio de Grassa y Su-Derivates of Seville.

As compared with October 6, 1961, fish-meal prices on the Hamburg Exchange on November 3, 1961, were mixed, with both domestic and imported fish meal somewhat lower on the average. (United States Consulate, Bremen, November 7, 1961.)

* * * * *

FISH OIL SUPPLIES ARE LIBERAL:

West Germany's imports of edible fish oils reached 32,110 short tons during January-June 1961, somewhat greater than in the same period of 1960. However, warm summer weather caused domestic consumption to decline below the seasonal level in the summer months. Sales of fish oil for local use and export were thus small.

As of mid-year 1961 production of edible fish oil in West Germany, and several other European countries, was running ahead of 1960. The resulting build-up in fish oil supplies caused some foreign buyers to withhold purchases in hopes of lower oil prices. German importers of fish oil adopted a similar

German Federal Republic (Contd.):

stand with the hope that United States and Peruvian fish oil prices would decline under the weight of heavy oil supplies. The United States and Peru are the major suppliers of fish oil to West Germany. (Foreign Crops and Markets, November 13, 1961, U. S. Department of Agriculture.)

* * * * *

FISH BODY OIL MARKET:

Although October 1961 sales of fish body oils increased somewhat over those of the previous month, they continued sluggish and prices were depressed, according to the leading importer of fish oil in Bremen.

It is estimated that the West German production of edible fish body oil in 1961 will reach about 25,000 metric tons as compared with 23,700 tons in 1960. Prices for

Rotterdam or Scandinavian ports. Reportedly, the Peruvians have begun to ship their fish oil in bulk in shiploads of about 10,000 tons to West European ports. The local trade source has estimated that Peruvian fish oil production will probably increase from about 100,000-105,000 metric tons in 1961 to about 140,000 tons in 1962.

The price at which United States menhaden oil was offered for sale early in November dropped to about \$118-\$118 per metric ton (5.3-5.4 U. S. cents a pound) c.i.f. Rotterdam or Scandinavian ports. (United States Consulate, Bremen, November 3, 1961.)

* * * * *

FOREIGN TRADE IN FISH BODY OILS, JANUARY-JULY 1961:

West Germany's imports of fish body oils during the first 7 months of 1961 totaled 32,502 metric tons valued at US\$4.9 million, an increase of 7 percent in quantity but a decrease of 2 percent in value as compared with the first 7 months of 1960.

Table 1 - Federal Republic of Germany Imports and Exports of Edible Fish Body Oils

Country of Origin	Imports							
	August 1961			% of Total by Weight		Average Prices ^{2/}		
	Quantity	Metric Tons	1,000 DM	Value 1/	(Percent)	(DM/Metric Tons)		(U.S.¢/Lb.)
Belgium-Luxembourg	15.7	9	2	0.3	-	573	-	6.5
Denmark	850.3	518	129	17.2	4.8	609	679	6.9
Netherlands	148.6	88	22	3.0	3.8	592	606	6.7
Norway	1,494.3	1,123	281	30.3	10.6	752	761	8.5
Portugal	18.3	10	3	0.4	-	546	-	6.2
United States	427.0	255	64	8.7	49.8	507	679	6.8
Chile	323.0	173	43	6.5	-	536	-	6.1
Peru	1,655.7	987	247	33.6	17.2	596	646	6.8
Total August 1961	4,932.9	3,163	791	100.0	-	641	-	7.3
Total August 1960	6,409.4	4,359	1,090	-	1/86.2	-	680	-
Country of Destination	Exports							
	August 1961			% of Total by Weight		Average Prices ^{3/}		
	Quantity	Metric Tons	1,000 DM	Value 3/	August 1961	1960	August 1961	August 1960
Netherlands	203.4	112	28	6.3	11.3	551	654	6.2
Norway	3,011.5	1,827	457	93.7	39.9	607	661	6.9
Total August 1961	3,214.9	1,939	485	100.0	-	603	-	6.8
Total August 1960	1,812.5	870	218	-	4/ 51.2	-	663	-

1/ Believed to be the value at port of entry in Germany.

2/ Other countries: Iceland - 10.7 percent; Angola - 3.1 percent.

3/ Believed to be the value at port of shipment in Germany.

4/ Other country: Sweden - 46.8 percent.

Source: Federal Office of Statistics, Wiesbaden.

German fish body oil are currently at about DM 460 per metric ton (5.2 U. S. cents a pound) ex factory. It is expected that about 70-80 percent of the West German production of fish body oil will be exported in 1961, as in previous years, although at considerably reduced prices.

The price of Peruvian semirefined fish oil dropped further during October 1961. According to a Bremen trade source, Peruvian oil early in November 1961 was offered at \$114 per metric ton (5.2 U. S. cents a pound) c.i.f. Rot-

terdam or Scandinavian ports. Reportedly, the Peruvians have begun to ship their fish oil in bulk in shiploads of about 10,000 tons to West European ports. The local trade source has estimated that Peruvian fish oil production will probably increase from about 100,000-105,000 metric tons in 1961 to about 140,000 tons in 1962.

The price at which United States menhaden oil was offered for sale early in November dropped to about \$118-\$118 per metric ton (5.3-5.4 U. S. cents a pound) c.i.f. Rotterdam or Scandinavian ports. (United States Consulate, Bremen, November 3, 1961.)

German Federal Republic (Contd.):

Table 1- West Germany's 1/ Imports of Edible Fish Body Oils, January-July 1961 and 1960

Origin	January-July 1961			January-July 1960		
	Quantity	Value		Quantity	Value	
		Metric Tons	Deutsche Marks 1,000	US\$ 1,000	Metric Tons	Deutsche Marks 1,000
United States	920	621	155	9,742	6,708	1,608
Denmark	-	-	-	1,045	710	170
United Kingdom	-	-	-	359	245	59
Iceland	598	407	102	200	142	34
Netherlands	1,092	612	153	961	621	149
Norway	1,502	1,338	335	1,824	1,507	361
Portugal	1,241	778	194	1,347	857	205
Angola	1,783	1,014	254	2,838	1,904	456
S. Africa Republic	-	-	-	1,334	924	222
Canada	280	217	54	948	699	168
Chile	1,708	949	237	851	548	131
Peru	22,968	13,591	3,308	8,986	6,181	1,482
Other Countries	410	231	58	-	-	-
Total	32,502	19,758	4,940	30,435	21,046	5,045

1/Includes West Berlin.

ket prices. Consequently, West Germany's imports of fish body oils (mostly menhaden) from the United States decreased by 8,822 metric tons, or 91 percent during the first 7 months of 1961 (see table 1).

same time in 1960. A total of 64 net herring boats were operating off those coasts. Some of the fish was transferred to trawlers and shipped on ice to West Germany. Other herring was frozen, particularly for Czechoslo-

Table 2 - West Germany's Exports of Edible Fish Body Oils, January-July 1961 and 1960

Destination	January-July 1961			January-July 1960		
	Quantity	Value		Quantity	Value	
		Metric Tons	Deutsch Marks 1,000	US\$ 1,000	Metric Tons	Deutsch Marks 1,000
Denmark	-	-	-	790	534	128
Netherlands	1,267	791	198	1,110	779	187
Norway	3,490	2,153	538	3,987	2,748	659
Sweden	5,008	3,042	761	4,286	2,926	701
United Kingdom	505	314	78	-	-	-
Total	10,270	6,300	1,575	10,173	6,987	1,675

Later in the summer menhaden oil producers in the United States lowered their prices to compete with Peruvian oil, which resulted in a substantial increase in shipments to Germany during August and the fall months of 1961. (United States Consulate, Bremen, October 6, 1961.)



Iceland

FISHERY TRENDS AS OF NOVEMBER 1961:

As of early November 1961, Iceland's southwest coast winter herring season had been proceeding more favorably than at the

vakia and East Germany, and the rest was salted or used for fish meal and oil. The news of a contract with Poland for delivery of 20,000 barrels of salted herring was announced.

During the week of November 6, 1961, Icelandic trawlers reported record high prices for sales of fresh fish on ice at Grimsby, England. Good prices for fresh fish on ice were also received at West German ports. Poor fishing weather in the North Sea was reportedly the reason for the high prices. (United States Embassy, Reykjavik, November 9, 1961.)

* * * * *

Iceland (Contd.):

FISH PRODUCTION, JANUARY-JULY 1961:

How Utilized	January-July	
	1961	1960
.. (Metric Tons) ..		
Herring^{1/} for:		
Oil and meal	113,758	65,857
Freezing	9,445	1,368
Salting	50,542	12,369
Fresh on ice	4,119	645
Groundfish^{2/} for:		
Fresh on ice landed abroad	16,312	11,798
Freezing and filleting	99,409	144,252
Salting	59,876	63,462
Stockfish	42,040	50,470
Home consumption	4,751	5,102
Oil and meal	2,378	3,610
Shellfish for:		
Freezing: Lobster	1,287	1,196
Shrimp	304	-
Canning (shrimp)	126	-
Total production	404,347	360,129
1/Whole fish.		
2/Drawn fish.		



Iran

IMPORTS OF MOST FISHERY PRODUCTS PROHIBITED:

Import regulations for the Iranian Year 1340 (March 21, 1961 to March 20, 1962) established an over-all import quota for all commodities. Imports of all goods except those on the prohibited import list may be imported free of licensing controls. But most fishery products are on the prohibited import list. Included are all canned fish, crustaceans (such as shrimp and lobster, prepared and preserved), mollusks, caviar and fish eggs and the like, as well as fish meal. Since fresh and frozen fish and other types of fishery products are not mentioned specifically in the prohibited list nor in the list of goods subject to the commercial profits tax, it is assumed that those products may be imported free of licensing controls.



Israel

THREE NEW DEEP-SEA TRAWLERS PLANNED:

Israel's Department of Fisheries has announced the approval of plans for the construction of three new deep-sea trawlers which will cost between IL1.0 million and IL1.5 million (US\$1.8 and \$2.7 million) each. They will be ordered from foreign shipyards for delivery in 1963.

This step is seen as a confirmation of an earlier policy decision to boost fishing in international waters. Plans call for operating one of the new vessels in the Canary Islands fishing grounds in the Atlantic. The second, a tuna clipper, will operate in the Indian Ocean off Madagascar and the coast of Africa. The third will be a large trawler to fish in the Red Sea, with Eilat as its home base.

Israel's Ministry of Agriculture has also approved an IL300,000 (US\$540,000) fishing boat pier at Eilat, which will include cold-storage facilities to handle catches from the Red Sea. (United States Embassy, Tel Aviv, report dated November 22, 1961.)



Ivory Coast

U. S. COMPANY INVESTS IN FISH PLANT:

A California cannery firm, in a 50-50 venture with private French capital, has concluded an agreement with the Ivory Coast Government to construct tuna freezing and storage facilities at the port of Abidjan. Construction of the facilities is expected to cost the new company in the Ivory Coast about US\$400,000. The plant will have capacity for freezing 130 tons per day, storage for 1,300 tons, and ice plant with a capacity of 60 to 80 tons per day.

The new firm will subcontract the actual fishing to French and Spanish fishermen, operating from 40 to 50 boats, and will also buy fish from Japanese vessels in the area.

The plant will be located at the old Abidjan port rather than at the new port to be completed in 2 or 3 years by the Government of Ivory Coast. Production will be possible in a short time with prefabricated storage and freezing units. (United States Embassy, Abidjan.)



Japan

FISHERY AGENCY UNDERTAKES TUNA PRODUCTION AND MARKETING STUDIES:

According to recent Japanese press reports, Japanese Minister of Agriculture and Forestry Kono conferred with U. S. Secretary of the Interior Udall regarding Japanese exports of tuna to the United States during the

Japan (Contd.):

latter's visit to Japan to attend the Joint Economic Meeting held in Tokyo in November 1961. Minister Kono is reported to have stated to Secretary Udall that restrictions placed by the United States on imports of Japanese tuna and increased exports of canned tuna to the United States by other countries are presenting serious problems to the Japanese tuna industry, and the Minister discussed the possibility of increasing exports of frozen tuna and canned tuna to the United States. Secretary Udall is reported to have stated that this was a matter which required further study, to which Minister Kono agreed.

Accordingly, Minister Kono has instructed the Fishery Agency to undertake a study of Japanese tuna production potential and market conditions. The Agency has made the study and is expected to submit a full report to Minister Kono shortly.

Latest press reports state that the Agency scheduled a preliminary meeting for November 21 to develop basic guides for the study. Reportedly, the Japanese hope to predict the demand for tuna in the United States as far ahead as 1970 and to estimate the amount of tuna that Japan can produce to meet this demand. (Shin Suisan Shimbun Sokuho, November 21, 1961; and other publications.)

* * * * *

TUNA INDUSTRY PROPOSES
LOBBY IN UNITED STATES:

The Government-Industry meeting of the Japanese Export Promotion Council convened on November 9, 1961, to discuss among other proposals, a frozen tuna industry proposal that negotiations at government levels be conducted in an effort to remove import restrictions imposed by foreign countries on Japanese tuna exports and that lobbyists be actively employed in the United States to block any movement aimed at tightening United States import restrictions on Japanese frozen tuna. The tuna industry also recommended the establishment of joint fishery bases abroad to regulate the tuna market. The marine products canning industry urged the Government to seek measures to relax, and if possible, remove tariff barriers of the United States and European countries.

This meeting was attended by Prime Minister Ikeda, International Trade and Industry

Minister Sato, Foreign Minister Kosaka, Finance Minister Mizuta, Agriculture and Forestry Minister Kono, Transportation Minister Saito, Bank of Japan President Yamagiwa, and other Government leaders. The fishing industry was represented by the President of Taiyo Fishing Company. (Shin Suisan Shimbun Sokuho, November 10, 1961; Suisan Keizai Shimbun, November 10, 1961.)

* * * * *

PRODUCERS ASSOCIATION PLANS
TO INCREASE FROZEN TUNA EXPORT
QUOTAS TO UNITED STATES:

On October 24, 1961, the Japanese Export Frozen Tuna Producers Association's Board of Directors adopted the following proposals on frozen tuna direct export quotas to the United States for the current Japanese fiscal year:

(1) Increase yellowfin exports from the present 30,000 short tons to 35,000 metric tons; (2) establish a special combined quota of 5,000 metric tons for yellowfin and albacore, with time and method of allocation of said quota to be determined by the Board of Directors; (3) increase tuna loin exports by 1,200 metric tons. Of this amount, 600 tons shall be allocated at the same time that the special quota of 5,000 tons indicated in (2) are allocated, and the remaining 600 tons of loins set aside as a special quota.

The above proposals were to be considered for adoption at a special general meeting of the Producers Association on November 7. If adopted, the new quotas would go into effect December 1. (Shin Suisan Shimbun Sokuho, October 26, 1961.)

* * * * *

FROZEN TUNA AND SWORDFISH EXPORTS
TO UNITED STATES TO BE INCREASED:

The Japanese Export Frozen Tuna Producers Association's Board of Directors held a special general meeting on November 7, 1961, and adopted the following proposals on frozen tuna exported from Japan proper to the United States:

1. Increase the yellowfin tuna export quota by 5,000 short tons, from the present 30,000 short tons to 35,000 tons. This increase of 5,000 tons will be allocated as follows: 4,000 tons on the basis of past performance records and 1,000 tons unassigned (so-called free quota).

Japan (Contd.):

2. Establish a separate special quota of 5,000 short tons for albacore and yellowfin tuna, the allocation of which shall be determined by the Association's Board of Directors.

3. Increase the tuna loin export quota by 600 short tons, from the present 3,500 tons to 4,100 tons. This increase of 600 tons will be allocated as follows: 570 tons on the basis of past performance records and 30 tons unassigned. Establish an additional special loin quota of 600 short tons, the allocation of which shall be decided by the Board of Directors.

4. Increase the frozen swordfish export quota by 1,000 short tons, from the present 5,500 tons to 6,500 tons. This increase of 1,000 tons shall be allocated as follows: 875 tons according to past performance records; 120 tons unassigned, and 5 tons to newly authorized exporters. In addition, establish a special 500-ton quota, the allocation of which shall be determined by the Board of Directors.

The increases in export quotas mentioned, with the exception of the special quotas (albacore-yellowfin tuna quota of 5,000 tons; loin quota of 600 tons, and swordfish quota of 500 tons), became effective December 1, 1961. However, it was reported that the Japanese Frozen Foods Exporters Association doubted the value of increasing the frozen swordfish export quota to the United States by 1,000 short tons (really 1,500 tons if the special quota of 500 tons is added). It considered a maximum of 700 tons to be a more reasonable increase, and while the swordfish export quota has been increased by 1,000 tons effective December 1, actual shipments may not likely exceed 700 tons. (Suisan Tsushin, November 8, 1961.)

Translator's Note: The following table shows current Japanese export quotas of frozen tuna destined for the United States, including the increases effective December 1:

Species	Japanese Frozen Tuna Export Quotas	
	Shipments to U. S. from Japan Proper	Transshipments
Albacore	30,000	5,000
Yellowfin	35,000	30,000
Yellowfin-albacore . . .	5,000	-
Tuna loin ¹	4,700	-

¹/Includes special quota of 600 tons.

* * * * *

FROZEN SWORDFISH EXPORT QUOTA TO UNITED STATES INCREASED:

The Japanese Export Frozen Tuna Producers Association early in November 1961 tentatively decided to increase the frozen swordfish export quota for the United States to 6,500 short tons in view of the increasing demand for swordfish in the United States. This is an increase of 1,000 tons over the previous 5,500-ton quota set in March 1961 for the Japanese fiscal year (April 1961-March 1962).

Normally, by the end of October, close to 1,000 tons of frozen swordfish remain in stock, but in 1961 the supply of swordfish was used up by the end of September. The 1961 fiscal year quota of 5,500 tons for export to the United States was allocated as follows: April-September, 2,750 short tons; October-December, 1,375 short tons; January-March, 1,375 short tons. (Shin Suisan Shimbun Soku-ho, November 4, 1961.)

* * * * *

TUNA FISHING CONDITIONS IN EASTERN PACIFIC, OCTOBER-NOVEMBER 1961:

The Marine Research Laboratory of Tokai University, Japan, early in November 1961 issued a report on tuna fishing conditions in the eastern Pacific the latter half of October and early November 1961.

Fishing in the vicinity of 107° to 114° W. longitude and 0° to 3° N. latitude averaged 5 tons per day per vessel. Fishing was also at the same rate west of 120° W. longitude. Big-eyed and yellowfin tuna made up the bulk of the catches.

Fishing continued since mid-October in the vicinity of 115° to 118° W. longitude and 4° to 5° S. latitude, averaged 5.2 metric tons per day per vessel. Fishing in other areas was slow. (Suisan Keizai Shimbun, November 10, 1961.)

* * * * *

FISHING FIRMS HOPE TO IMPORT FROZEN TUNALIKE FISH FROM SOUTH AFRICA:

Now that the Japanese Government liberalized trade in marine products beginning October 1, 1961, the major Japanese fishing companies are reported to be seeking ways and means of importing frozen tunalike fish and spearfish to Japan. Domestic demand for tuna is expected to be good and a shortage is expected, especially for tuna used in the production of fish ham and sausage.

Japan (Contd.):

The large companies appear to be most interested in importing spearfish, for which there is no export market. Spearfish can be imported from South Africa for about \$300 a metric ton delivered to Japan, and Japanese firms seem to want to import spearfish particularly from Formosa, Australia, and the coastal countries of South Africa. Already one large fishery firm is reported to have imported frozen spearfish from an undesignated foreign country. (Shin Suisan Shimbun Sokuho, October 26, 1961.)

* * * * *

RECORD TUNA TRIP AT YAIZU:

In October 1961 the Japanese long-liner Fukuhisa Maru No. 8 (408 tons) established the highest landing record of a single tuna vessel since the establishment of the Yaizu fish market in Shizuoka Prefecture. The vessel landed Indian (bluefin) tuna, including big-eyed, caught off Mexico. In three days it unloaded 330 metric tons valued at \$91,000.

The previous highest record was 155 tons valued at \$81,389 landed by the Showa Maru No. 2 in August 1960.

The ex-vessel market price of Indian (bluefin) tuna ranged from a high of \$679 a metric ton to a low of \$163 a ton, but most of it sold at \$175 a ton because of purchases by packers. The better grades were sold to Kansai buyers at an average of about \$201 per ton. (Japanese periodical.)

* * * * *

JAPANESE TO EXPLORE FOR NEW TUNA RESOURCES OFF CEYLON:

A November 1961 report indicated that a two-man team of Japanese fishery experts would be dispatched to the Maldives Islands to conduct exploratory work in January 1962 in accordance with an agreement reached between Japan and the Maldives Dependency of Great Britain.

The Maldives Islands located near the southeastern tip of India are reported to have a population of approximately 90,000, of which 70 percent are engaged in fishing (primarily for skipjack tuna) and processing of marine products.

In addition, the Japan Overseas Fisheries Cooperative Association planned to charter

the Shizuoka Prefectural Fisheries Research Laboratory's research vessel Fuji Maru (191 gross tons) to survey the waters off Ceylon, Nicobar Islands, and the Maldives Islands for a period of approximately three months beginning November 16, 1961. The vessel would investigate skipjack resources and the presence of live bait in an effort to develop new fishing grounds for the Japanese tuna fishing industry. This study would cost approximately 3.2 million yen (US\$8,900), of which the Japanese Ministry of Agriculture would contribute 50 percent. (Shin Suisan Shimbun Sokuho, October 28 and November 4, 1961; Suisan Keizai Shimbun, October 25, 1961.)

* * * * *

FREIGHT RATES FOR CANNED TUNA SHIPMENTS TO UNITED STATES BOOSTED 6 PERCENT:

A 6-percent increase in freight rates for Japanese shipments of canned tuna to the United States was reportedly approved for November 1, 1961, to April 30, 1962, by the Japanese Freight Conference. Freight rates for canned salmon and canned crab were to be raised by 10 percent from November 1, also. Thus, the freight charges for canned tuna will be about two cents less per case than for other canned fishery products. The new freight rates for canned marine products are:

	Destination		
	Pacific Coast	Atlantic Coast	Overland Common Points
Old Rate: (US\$/Short Ton)		
Canned tuna	24.25	30.00	22.50
New Rate:			
Canned tuna	25.75	31.75	24.25
Others ¹	26.75	33.00	22.75

¹/Includes products such as canned salmon and canned crab.

Freight rates for frozen tuna shipped from Japan proper to the United States remained unchanged. As of late October freight rates for frozen tuna were: \$57.75 a short ton for albacore, skipjack, yellowfin, big-eyed, and bluefin; \$78.75 for tuna loins; and \$68.25 for tuna fillets. As for freight rates for frozen tuna shipments from the Atlantic Ocean to Japan, the Japanese Freight Conference informally approved the continuance of current freight rates. This decision was based on the Japan Frozen Tuna Sales Company's contention that the 7.5-percent increase in freight charges recommended by the Freight Conference would result in an excessive increase in the sales price of frozen tuna. (Shin Suisan Shimbun, November 4, 1961; Suisan Tsushin, October 23, 1961.)

* * * * *

Japan (Contd.):

FROZEN SABLEFISH SHIPPED TO U. S.:

Japanese fishing companies since the summer of 1961 have been encouraging exports of frozen sablefish or silver cod caught in the North Pacific. As of mid-October 1961 a total of 180 short tons had been contracted for export. The buyers are on the west coast of the United States (130 tons) and Hawaii (50 tons).

The price is 20-22 U. S. cents a pound c. & f. for large fish more than 5 pounds each, and fish weighing less than 5 pounds are offered 4 to 5 cents cheaper.

Since frozen sablefish are used for smoking and large fish caught with long line are preferred, the amount available for export is small and demand is expected to exceed the supply. (Suisan Tsushin, October 21, 1961.)

* * * * *

SURVEY SHOWS LARGER TUNA VESSELS BEING CONSTRUCTED:

Data compiled by the Japanese National Federation of Tuna Cooperative Associations show that the number of vessels of 40 and 180 tons gross in the Japanese tuna fleet is diminishing steadily, while the number of vessels over 180 tons gross is increasing. Vessels between 40 and 180 tons gross are being used for replacement purposes to construct larger distant-water vessels of over 180 tons gross, which the Japanese consider more efficient.

Numbers of Japanese Tuna Vessels by Size Class and Year/ ¹				
Vessel Size (Gross Tons)	1960	1959	1958	1957
40-70	167	179	207	200
70-100	341	387	415	422
100-180	279	327	365	389
180-240	70	66	59	50
240-350	121	98	82	73
Over 350	151	130	115	109
Total	1,129	1,187	1,243	1,243

¹ Does not include tuna vessels under 40 tons gross, which do not require licenses; and 40- to 80-ton vessels which engage in other fisheries.

Table does not include tuna vessels in the 40- to 80-ton range which engage in other types of fishing or former salmon vessels which have switched to tuna fishing. Those types of vessels total 266, of which 49 are former salmon fishing vessels. (Suisan Keizai Shimbun, November 8, 1961.)

* * * * *

FISH MEAL FACTORYSHIP DEPARTS FOR ANGOLA:

The Japanese fish meal factoryship Renshin Maru (14,094 gross tons) departed Japan for Angola, Africa, on October 30, 1961. This voyage was expected to take 30 days. The Renshin Maru will remain on the fishing grounds for about 70 days until early February 1962, during which time she will be anchored within six miles off the Angolan coast. Her production target is 7,300 metric tons of fish meal (of which 2,300 tons are to be turned over to Angola), 1,500 metric tons of fish solubles, 1,000 tons of fish oil, and 1,500 tons of frozen fish.

The Renshin Maru normally operates as a fish meal factoryship in the eastern Bering Sea during the summer months. For the first time the vessel is being sent to the waters off Angola to process anchovies for fish meal.

Under arrangements worked out between Angola and Japan, Angolan fishermen will sell their catches to the factoryship. About 40 Angolan vessels will be assigned to supply anchovy to the factoryship and 14 trawlers will deliver to the factoryship fish for freezing. Fish caught by the catcher vessels will be transferred to the Renshin Maru by means of 4 fish pumps, which were installed on the factoryship just before her departure at a cost of 5 million yen (US\$14,000) each.

The two 120-ton trawlers which will work in conjunction with the Renshin Maru departed Japan on October 20. The two vessels will explore grounds beyond the territorial waters of Angola primarily for shrimp. (Suisan Tsushin, October 23, 27, and 31, 1961.)

* * * * *

ANTARCTIC FISHERIES RESOURCES TO BE STUDIED:

The Japanese Ministry of Education announced late in October 1961 that biological research and observation of the Antarctic will be carried out with the Tokyo Fisheries College training ship Umitaka Maru. The ship was to sail from Tokyo at the end of October, returning in March 1962.

The investigation will be carried out every other year by a team of 11 in the sea area between 20° east longitude, and 50° west longitude.

The subjects of observation include various problems relative to resources and potential

Japan (Contd.):

fisheries, including beam-trawling, and oceanic observations from the Antarctic to Cape Town, Africa. (Suisan Keizai Shimbun, October 27, 1961.)

* * * * *

FISHING ACTIVITIES IN THE BERING SEA:

Catch statistics released by the Japanese Fishery Agency show that for the period April-October 1961 the 33 Japanese mothership-type bottom trawl, long-line, and gill-net fleets which operated principally in the north central and eastern Bering Sea landed a total of 621,114 metric tons of fish and 96,410 crabs.

The Japanese Northern Waters Mothership Association has decided to organize a council to regulate and

COMMERCIAL FISH HATCHERIES AND FISH FARMS:

Although Japan is surrounded by seas and is renowned for its marine fishing ingenuity, it is still unable to meet the growing domestic demand for certain kinds of fish. Encouraged by this demand, commercial fish culture in Japan has made remarkable progress.

Unique fish-culture projects include those for eels, shrimp, and turtles—products which are considered essential to Japanese cuisine. Hatcheries for such expensive fish as sea bream and mullet are also doing well. Eels are widely appreciated for their rich taste as well as for their abundant vitamin A content, which is 300 times that of beef. Shrimp are used in the cuisine of practically all nations, and in Japan, the demand is exceedingly good as it is an essential ingredient for "tempura" (shrimp dipped in a special batter and deep-fat fried). Turtles are regarded by epicurians as an effective tonic food as well as a delicacy. These three products are sold at fancy prices on the Japanese market.

Species	Japanese 1961 Bering Sea Landings by Species and Fishing Areas					
	Fishing Areas ¹ /					
	A ² / (May-Oct.)	B ² / (Apr.-Sept.)	C (May-Oct.)	D (May-Oct.)	E (Apr.-Oct.)	Total
(Metric Tons)						
Flatfish	305	1,333	47,538	665	404,122	455,963
Halibut	1,995	6,248	2,763	-	-	11,005
Cod	1,541	2,861	631	214	1,517	6,764
Alaska pollock	69	193	979	343	22,820	24,404
Sablefish	3,630	8,420	6,688	6,728	770	26,231
Rockfish	1,383	1,586	1,494	1,796	4,284	10,543
Shrimp	145	143	71	9,601	265	10,225
Herring	23,251	48,511	44	28	495	72,260
Others	29	372	113	3,056	2,149	5,719
Total	32,348	69,667	60,315	22,431	436,353	621,114
(Number)						
Crabs	75,346	20,064	-	-	1,000	96,410

¹/Key to fishing areas:

- Area A: Between 170° E. and 175° E. longitude.
- Area B: Between 175° E. and 180° longitude.
- Area C: Between 180° and 175° W. longitude.
- Area D: Between 175° W. and 170° W. longitude.
- Area E: Area east of 170° W. longitude.

²/Catch from these two areas mainly off bank between Cape Olyutorski and Cape Navarin.

coordinate the bottom trawl, long-line, and gill-net fishery in the Northern Waters (refers to the Okhotsk Sea, Bering Sea, and the North Pacific Ocean). To be formed by the 8 companies belonging to the Association and 3 other fishing companies, this council will be established within the Association and placed under the supervision of the Administrative Chief of the Northern Waters Mothership Association. The Association plans to admit into the council long-line and gill-net fishermen not now members of the council who plan to fish in Northern Waters.

The stern trawlers No. 50 Akebono Maru (1,425 gross tons) and No. 51 Akebono Maru (1,475 gross tons) departed Kurihama, Japan, for the eastern Bering Sea on November 10 and 11, 1961, respectively. These two vessels were expected to fish the grounds near the Pribilof Islands for about 50 days. (Nippon Suisan Shimbun, November 13, 16, and 18, 1961.)

* * * * *

Today, there are 760 eel-raising farms in the country, mostly in the Hamanako Lagoon in Central Japan, where river water pours into the sea. In this area alone, 2,200 metric tons of eels are produced annually, with sales totaling some US\$2,800,000. These "farm-raised" eels are shipped to major cities where demand for broiled eels continues to grow. To show how popular broiled eels are, the Tokyo classified telephone directory lists nearly 1,000 eel specialty restaurants, some of which have enjoyed thriving business for more than 300 years.

Demand for shrimp is increasing rapidly, not only for the traditional "tempura" dishes but also for Chinese cuisine. As much as US\$670,000 worth of this particular shellfish had to be imported in 1960 alone to meet the growing demand. The acute and continued shortage of the domestic shrimp supply has stimulated the development of shrimp hatcheries and one hatchery recently succeeded in raising shrimp and marketing them at less than half the competitive price. These shrimp are now shipped by plane from a shrimp farm in Shikoku, Central Japan.

Japan (Contd.):

This shrimp-farm project was developed by Dr. Fujinaga, who previously served in the Government as director of the Research Bureau of the Fisheries Agency. Upon retiring from active service in September 1954, he opened a shrimp farm in Shikoku beside the Seto Inland Sea, utilizing a salt farm which had been closed. After confirming that 2,000,000 shrimp can be hatched from the eggs of a single female shrimp, he started raising shrimp in a special tank, and is now shipping grown shrimp to Tokyo every day. He is planning to present 50,000 female shrimp to both of the neighboring prefectures of Okayama and Kagawa. It is expected that the shrimp farms in Central Japan will eventually be able to produce 2,000 tons of shrimp a year.

"Suppon" or soft-shell turtles are generally believed to be a tonic food, but they are also a delicacy when prepared by an expert chef. The domestic supply of "suppon" is also too small to meet the growing demand and the price is always high. Despite the difficulties encountered in artificial raising, there are six "suppon" farms, mostly in the "Paradise of Hatcheries," the Hamanako area in Central Japan. In a typical farm, they are hatched and raised in ponds. There is a different pond for each age group ranging from one-year-olds through five-year-olds.

The commercial hatchery business is booming in Japan today. Aside from those already mentioned, there are numerous commercial hatcheries and farms for such freshwater fish as salmon and trout, carp, sweet-fish ("ayu"), bullfrogs, and others. Among salt-water fish culture, oyster farming is most prevalent, producing some 20,000 tons of oyster meats annually, followed by laver and kems (seaweed), and clams. (Japan Report, November 15, 1961, Japan Information Service, Consulate General of Japan, New York, N. Y.)

Note: See *Commercial Fisheries Review*, March 1960 p. 65.



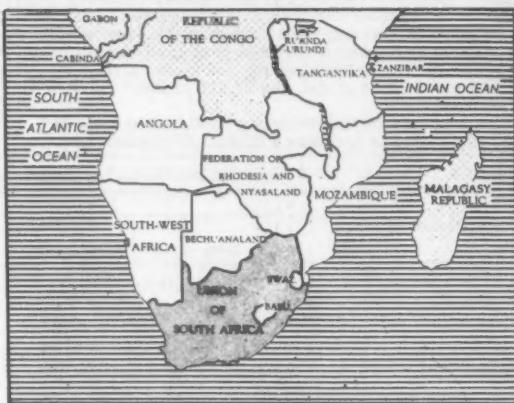
Malagasy Republic

TUNA CANNING DEVELOPMENTS:

A French company, which has small canning plants at Majunga, Diego Suarez, and Tamatave, has been negotiating with the Chinese Nationalist Tuna Fishing Fleet which has operated well off the Malagasy Republic (formerly Madagascar) coast for a considerable time, to furnish 140 metric tons of tuna. The Chinese have been ready to supply this amount for some time but have been held up by the firm who was expected to be ready to accept the tuna in December 1961. The firm intends canning the tuna and marketing it in Europe and the United States to determine whether a local tuna fishing and canning industry can be made to pay.

It is reported that previously an attempt was made to firm up arrangements with Japanese tuna vessels whereby they would furnish a trial lot of tuna and at the same time the Japanese would train Malagasy fishermen. This fell through because the Japanese wish to be paid for their catch in hard cur-

rency, a condition to which the Malagasy could not agree. The Chinese fishing fleet is reported to be willing to accept CFA francs. This may be due in a measure to the fact that if the establishment of a local tuna industry is possible, the Chinese fleet would then base on Diego Suarez, working out of that port, rather than returning to Formosa to dispose of their catch, a voyage which now requires about three months.



The Special Fund of the United Nations is further examining the fishing possibilities of Madagascar and has as a first approach the idea of setting up a school for training fishermen, this school to be a subdivision of the Agricultural College. The school would turn out monitors capable of instructing fishermen and of organizing and directing cooperatives.

Those who have interested themselves in this subject agree that the possibility of a paying fishing industry in Madagascar will depend less on the techniques and organization, as important as these may be, than on the finding of markets and the ability to compete with other suppliers of fish. Local consumption can be increased but probably not to the point where the transportation and refrigeration facilities required would be justified. Foreign markets must be found and held.

In addition to tuna fishing, attention is being given to the possibilities of exploiting the shrimp available off the Madagascar coast. This latter will require refrigerating and freezing facilities, calling for considerable capital outlay. (United States Operations Mission, Malagasy Republic, October 21, 1961.)



Mexico

SHRIMP EXPORTS TO U. S. MUST MEET MINIMUM FOOD AND DRUG STANDARDS:

Reliable sources in the shrimp industry in Mazatlan, Mexico, have stated that a notice received from the U. S. Food and Drug Administration states that effective November 13, 1961, all shrimp imported into the United States must meet the minimum standards set by that agency.

Responsible elements in the industry have realized for years that their product was not up to required standards but have been able to do nothing about it. It is believed that the freezing plants in general are satisfactory or with relatively little expense may be brought into line. The trouble lies in the boats and the handling of the shrimp before it reaches the packing houses.

When unloaded in port the boats return to the fishing grounds as quickly as possible without having their holds adequately cleaned. Frequently the catch is not handled properly immediately upon being hauled in. Because of a bonus system which provides a premium for a capacity catch the ships stay out as long as possible. (Report from United States Consulate, Mazatlan, November 8, 1961.)



Morocco

CANNED FISH EXPORT TRENDS:

Moroccan exports of canned fish have steadily expanded. The final results of the 1960/61 season (June 1, 1960-May 31, 1961) showed exports of 2,331,451 actual cases as compared to 2,066,569 cases for the previous season. Exports in the 1960/61 season consisted of: sardines 1,984,572 cases, tuna 130,988 cases, and other canned fish 215,981 cases. France, Italy, West Germany, and Ghana were the principal buyers of Moroccan canned fish products.

The current season (began June 1, 1961) got off to a good start with exports during June and July at a record high--425,351 cases as compared to 294,171 cases for the same two months the previous season. June and July 1961 exports consisted of sardines 304,369 cases, tuna 17,225 cases, and other canned fish 67,757 cases.

While prospects for the industry were good, the sardine packers expressed some worry over their privileged position in the French market. They fear that Portugal will follow the United Kingdom into the Common Market thus causing the Moroccan sardines to lose their competitive advantage, deriving from their admission free of French customs duties. (U. S. Embassy, Rabat, October 23, 1961.)



New Zealand

TUNA INDUSTRY PLANNED:

New Zealand is planning to start a tuna industry, according to the Governing Director of a New Zealand fishing firm. "The fish are available in our waters and we're going to develop our own industry," he said.

As a preliminary, private enterprise and the Government will combine in a 12-month tuna survey off New Zealand. The New Zealand survey will follow the pattern of similar surveys in Australia. In Australia fishermen have learned to follow tuna at the start of the season off the coast of New South Wales to Port Lincoln in South Australia. The Director of the New Zealand firm said New Zealand fishermen know that tuna abound off the North and South Islands and would follow them around and endeavor to establish their habits. He said that as tuna was not sold "fresh," it would probably be canned. (Fish Trades Review, September 1961.)



Nicaragua

SHRIMP FISHERY TRENDS:

A French shrimp fishing company, located at El Bluff on the Atlantic Coast, has been in serious financial difficulty and its operations are virtually at a standstill. Although other shrimp companies continue to export, shipments remain at a low level.

On the Pacific Coast, however, a United States shrimp firm has made an apparently successful start. It shipped 35,000 pounds of shrimp in September 1961 and plans to construct a processing plant near Corinto. (United States Embassy, Managua, October 25, 1961.)



Nigeria

JAPANESE-NIGERIAN JOINT FISHERY ENTERPRISE AT LAGOS:

A large Japanese fishing company is planning to establish a joint fishing base at Lagos, Nigeria. Total capital investment for this base is reported to be 50 million yen (US\$139,000), with Japan contributing 30 percent and Nigeria 70 percent. Of the Japanese share, the Japanese fishing company and another Japanese firm are contributing 50 percent each. The Nigerian share is to be put up by the Nigerian Government and a Nigerian shipping and trading company.

The base facilities will include a 500-ton capacity cold-storage plant. Construction of the plant is to be financed with approximately 500 million yen (US\$1.4 million) to be borrowed from the Japanese Overseas Fisheries Cooperative Fund, and negotiations over this matter the latter part of October 1961 were being conducted between the Governments of Japan and Nigeria. By agreement, this cold-storage plant may also be used by Japanese fishing vessels other than those fishing directly for the base.

The Japanese fishing company planned to dispatch a pair of two-boat trawlers to Nigeria in mid-December 1961. Eventually, a total of six trawlers, each of 100 tons gross, are to be based at Lagos. Annual production target for the fleet is 6,000 metric tons of croaker, for which a preliminary selling price of 60,000 yen (US\$167) a metric ton has been agreed on.

Concerning the construction of cold-storage plants elsewhere along the coast of West Africa, the same Japanese fishing company is constructing a 2,000-ton capacity cold-storage plant in Monrovia, Liberia, together with an Italian firm. This plant is scheduled to be completed in August 1962. (Shin Suisan Shimbun Sokuho, October 27, 1961.)



Norway

NORWAY-SOVIET TALKS ON NORWEGIAN FISHING LIMITS END:

Norwegian and Soviet negotiators have concluded talks at Oslo on continued permission for Soviet fishing craft to operate inside the Norwegian fishing zone between 6 and 12

nautical miles. Views of the two delegations will next be considered by their respective Governments.

Soviet negotiators maintained that there was a difference of principle between the Russian 12-mile territorial limit and the Norwegian 12-mile fishery limit. In their opinion, a Soviet commitment to buy Norwegian fish and fish products for several years could serve as a basis for an agreement on Soviet fishing rights.

The Norwegian delegation maintained that the reciprocal principle applied by Norway in these and similar negotiations involve a reasonable opportunity for Norwegian fishermen to operate in waters between 6 and 12 miles off the coast of the other nation. Whether the limit is called territorial or fishing limit makes no difference. (News of Norway, November 30, 1961.)

* * * * *

FROZEN FISH EXPORTS INCREASE:

The Norwegian cooperative sales organization Norsk Frossenfisk A/L, whose brand frozen fish is now exported to 30 foreign countries, reported total sales of Kr. 94.8 million (US\$13.3 million) in the fiscal year that ended June 30, 1961. Since 1959, sales increased about Kr. 24 million (US\$3.4 million).

Frozen fish exports in 1960/61 earned about Kr. 80 million in foreign exchange, or about Kr. 7 million (US\$11.2 million) more than in the preceding fiscal year. Of the 27,900-ton total production, 25,200 tons were exported.

The largest single market is in the United States where the sales organization's products are sold by a subsidiary in Jersey City, N. J. Another subsidiary will expand its fish stick plant at Mobile, Ala., to meet growing demand in the United States.

In its annual report, the sales organization says that a Norwegian link with an enlarged Common Market (EEC) is of the utmost importance to the nation's frozen fish industry. An EEC link might have certain disadvantages, but they are trivial compared with the difficulties that would follow if Norway were to stay outside the trade organization. (News of Norway, November 4, 1961.)

Note: See Commercial Fisheries Review, February 1960 p. 86.

○○○○○○○○○○

Portugal

CANNED FISH EXPORTS, JANUARY-JUNE 1961:

Portugal's exports of canned fish during the first half of 1961 amounted to 29,378 metric tons, 13 percent more than in the same period of 1960. Sardines accounted for 82.4 percent of the 1961 exports, followed by anchovy fillets with 8.2 percent.

Portugal's principal canned fish buyers in the first half of 1961 were Germany with 6,033 tons, followed by Great Britain with 3,594 tons, and the United States with 3,397 tons.

Product	January-June			
	1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	24,212	1,274	22,244	1,170
Chinchards	791	41	412	21
Mackerel	278	11	125	6
Tuna and tunalike	1,258	45	997	36
Anchovy fillets	2,699	270	2,062	206
Others	140	7	154	7
Total	29,378	1,648	25,994	1,446

In June Portugal exported a total of 4,842 tons of canned fish--sardines accounted for 76.8 percent of that total. Also during June, exports to the United States consisted mainly of canned sardines (208 tons), anchovies (101 tons), tuna and tunalike fish (98 tons), and mackerel (5 tons). (Conservas de Peixe, August 1961.)

* * * * *

CANNED FISH PACK, JANUARY-JUNE 1961:

Portugal's total pack of canned fish in oil or sauce for the first half of 1961 amounted to 16,115 metric tons, an increase of 4,306 tons or 36 percent over the same period in 1960. The sardine pack and the anchovy fillet pack combined accounted for 83.1 percent

Product	January-June			
	1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	9,314	490	6,114	322
Chinchards	641	34	288	15
Mackerel	533	21	119	4
Tuna and tunalike	2,621	94	2,934	104
Anchovy fillets	2,842	285	2,119	212
Others	164	9	235	12
Total	16,115	933	11,809	669

of the total pack. Substantial increases were noted in 1961 in the packs of anchovy fillets, sardines, and mackerel. There was a decrease of 10 percent in the pack of tuna for the first 6 months of 1961.

During the first half of 1961 sardine landings (for canning and other purposes) in Portugal totaled 20,847 tons. Landings of species used for purposes other than canning were 1,848 tons of anchovies, 705 tons of mackerel, and 828 tons of tuna and bonito. (Conservas de Peixe, August 1961.)



South Africa Republic

FISH MEAL MARKET TRENDS, OCTOBER 1961:

After a few very quiet months the South African fish meal market resumed active trading in October 1961. The following prices were obtained from a reliable source in the industry:

In October 1961, 900 long tons were sold to West Germany at a price of US\$126.20 per long ton, c.i.f.

In the same month, 10,000 long tons were sold to the United Kingdom at a price of 15 shillings per protein unit, which works out for 65 percent protein meal to roughly \$135 a long ton, c.i.f. United Kingdom ports, for delivery up to the end of 1961.

In November 1960, it was reported by the South Africa Fishmeal Producers' Association that its representatives had sold £1,000,000 (US\$2.8 million) worth of fish meal to Communist East Germany; the quantity sold was not stated. Later information shows that the sale totaled 50,000 metric tons at £1,750,000 (\$4.9 million), or about \$98 per metric ton.

Although no sale has been concluded with the South Africans yet, it is understood that the East Germans have estimated their 1962 requirements at 100,000 metric tons and that they will buy at least 50,000 tons from South Africa and the rest from Peru. The East Germans prefer the South African product, but the International Fishmeal Exporters' Organization does not favor letting them buy the entire lot from South Africa. It is estimated that a price within the range of \$120-

South Africa Republic (Contd.):

125 per metric ton will probably be finally agreed upon.

Sales were being made early in November 1961 to British buyers for 1962 production on a basis of 15s. 6d. (almost \$2.17) per protein unit; the buyer is guaranteed a minimum of 60 percent protein but payment is made on the actual protein content of the meal as determined by analysis of the shipment.

On the export quota system now in effect, South Africa's basic quota is 160,000 metric tons and all the members of the International Fishmeal Exporters' Organization agreed to export 20 percent less than their quota in 1961. South Africa exceeded her figure of 128,000 metric tons by roughly 10,000 tons and it is still undecided whether this will be debited against her 1962 quota. The 1962 quotas have been set at the base quota minus 15 percent or, for South Africa, 136,000 metric tons.

The domestic price of South African fish meal remains as previously reported: £38 (\$106.40) a short ton.

The bulk of South African fish meal is officially reported to have a digestibility content of 94 percent; a negligible quantity tests out at less than 92.5 percent so that the latter figure could almost be guaranteed. (United States Consulate, Cape Town, report dated November 6, 1961.)



Taiwan

JAPANESE TO CONSTRUCT
TWO TUNA LONG-LINERS:

Two 550-ton tuna long-line vessels are scheduled to be constructed at Shimizu, Shizuoka Prefecture, Japan, for a Taiwan fishing company at a cost of 155 million yen (US\$431,000) each. They are expected to be completed about February 1962, and will be based at the north Formosan fishing port of Keelung. The Taiwan fishing company plans to operate the two vessels in the Indian Ocean and hopes to export part of the vessels' catches to the United States. (Suisan Keizai Shim bun, November 15, 1961.)



U.S.S.R.

FISHING ACTIVITY ON GEORGES BANK:

In early October 1961, 20 Soviet trawlers and 15 drift gill-netters were sighted fishing mainly for herring, on the Northern Edge of Georges Bank. At that time, no United States fishing vessels and only 4 Canadian scallop draggers were present in the area. Later in the month, as many as 75 to 100 Soviet vessels were reported in the vicinity.



Russian "Majakovski"-type stern trawler fishing on the "Northern Edge" of Georges Bank in October 1961. Leading portion of cod end being hauled up the stern ramp of the trawler.

A large Soviet factory-trawler (280 to 350 feet in length) caught approximately 8,000 pounds of fish in two hours of stern trawling. Two types of drift gill-netters (150-200 feet long) were present; some of the larger ones were equipped to trawl over the side during the daylight hours when not gill-netting. Each morning catches were transferred from the drifters to two cargo ships (tenders) anchored nearby.

* * * * *

EMPHASIS IS ON LARGE
VESSELS FOR FISHING:

High-seas fleets of motherships, factory-trawlers, and other craft produced over three-fourths of the 1960 Soviet catch.

Fishing vessels now being constructed are large, improved types, such as the Leskov

U. S. S. R.:

and Maiakovski factory-trawlers of 3,600 metric tons displacement, and motherships of up to 19,500 tons. Twenty-three vessels of the Leskov class have been ordered from Gdansk, Poland; this shipyard has delivered 8 vessels of this type. The vessels are equipped with 4 German filleting machines designed to fillet various sizes of fish. With similar equipment, Maiakovski-type vessels are being built at Nikolaev on the Black Sea. Five have been delivered, with the number on order unknown. Both types of stern factory-trawlers are operating in the North Atlantic and in waters off West Africa.

Two classes of motherships are now being constructed in Polish shipyards for the Soviets. The newest displaces 19,500 metric tons and will be able to stay at sea for 75 days. It is designed mainly to support herring operations, but can be diverted to processing groundfish. The vessels have stern ramps similar to whalers or factory-trawlers to bring aboard catches in cod ends left by fishing vessels. The other type of mother-ship displaces 17,000 metric tons and 8 have been delivered from Polish yards with 11 more on order. This ship is manned by a fishing and processing crew of 270.

* * * * *

AUTOMATION FOR FACTORY- TRAWLERS:

At Leningrad, electronic computers have been developed to operate gear, engines, and processing equipment on large Soviet factory-trawlers. The computer, aided by underwater television, will regulate the trawl depending on depth of fish concentrations. A 5,000-ton trawler, equipped with a computer, will require a crew of only 22; it reportedly will be almost five times more efficient than present trawlers and reduce production costs by 70 percent. (The Fishing News, September 29, 1961.)

* * * * *

NEW BREED OF SALMON DEVELOPED:

Fish breeders on the U. S. S. R. island of Sakhalin (north of Japan) reportedly have evolved a new type of salmon from the masu and humpback species. The new breed weighs more than three times its progenitors at any stage of development and grows to a weight of about 10 pounds. The Soviets have done extensive research on the breeding and trans-

planting of Pacific salmon. (World Fishing, October 1961.)

**United Kingdom****REPORT OF FISHERIES STUDY GROUP:**

In January 1961, the Minister of Agriculture, Fisheries and Food, announced that Fishery Ministers proposed to set up a small study group to consider what grant-aided experimental work should be done to help the British fishing industry to meet the new conditions they would have to face over the coming years. This group held a number of meetings since March 1961, and submitted its first report to Ministers early in November 1961. The group made a preliminary survey of the experimental work which might be desirable in connection with the design of new vessels; conversion of existing vessels; development of freezing at sea; development of new equipment and gear; exploration of new fishing grounds; and exploitation of species of fish not at present consumed in quantity in this country.

The Group thinks that a good deal more experimental work needs to be done on the design of vessels suitable for freezing fish at sea, and that the best method of assistance is for grants to be given in suitable cases, for the building of experimental vessels on the condition that full information is made available to the industry. The White Fish Authority has already recommended and obtained Government approval for one such project, and has other possibilities in mind. The Group also thinks that experimental work should be done on the possibility of converting orthodox distant- or middle-water trawlers for freezing and that this might, in the first instance, be investigated through paper studies commissioned by the White Fish Authority.

The Group also considers that the research work on the development of freezers with improved performance now being done at the Torry Research Station should be accelerated and that the White Fish Authority and the D.S.I.R. should investigate, possibly in conjunction with the aircraft industry, the possibility of developing compact and lighter refrigerating machinery for use in trawlers.

In the field of new equipment and gear the Group selected two matters as the most important for early investigation. The first is further work on fish-working machinery, for gutting and filleting. Much has already been done, but the Group thinks more is required, particularly on machines for use on board ship. The second is investigation of lighter and improved trawling gear which would enable trawlers, particularly in the middle-water fleet, to fish rough grounds now inaccessible to them.

The Group also considered that further exploratory voyages, both by research vessels and by commercial trawlers, to test new grounds were desirable, and have recommended that such voyages should be planned to cover the following areas: an area in the Barents Sea; the Dohrn Bank off east Greenland; the coast of Labrador; and an area off the south-west coast of Norway. In addition, the Group considered that experimental voyages on herring trawling, particularly for middle-water vessels, should be planned. The White Fish Authority and the Herring Industry Board are considering the necessary action on these recommendations.

Finally, the Group surveyed the possibilities of experimental work on the catching and marketing of species of fish not at present consumed in considerable quantities in this country. It considered that some work should be done on ocean perch, both on methods of handling and preparation of the fish on board, and on marketing. It suggested that the Torry Research Station should undertake work on the former, in association with the White Fish Authori-

United Kingdom (Contd.):

ty, and that the Authority should consider the possibility of a pioneer marketing experiment when conclusions had been reached on the best way to present ocean perch to the public.

Some of the projects recommended by the Group will need to be examined by the White Fish Authority and the Herring Industry Board. On the basis of their examinations, the Authority and the Board will submit to the Ministers for approval those projects for which they think satisfactory arrangements can be made.

The Group will continue to meet from time to time to consider the possibility of other experimental work. One particular matter which it proposes to consider at its next meeting is whether further experimental work needs to be done on "expedition fishing" and the transfer of fish at sea.

The Group had the following terms of reference: "To give advice on what grant-aided experimental work is required for the purpose of making available to the white fish industry information primarily needed for the development of distant and middle water fishing, and what priorities should be given to such work." (United States Embassy, London, November 3, 1961.)

* * * * *

FISHERY LOANS INTEREST RATES REVISED:

The British White Fish Authority announced that as a result of changes in the rates of interest charged to them by the Treasury, their own rates of interest on loans made as from October 14, 1961, were:

Fishing vessels of not more than 140 feet, new engines, nets and gear: On loans for not more than five years, $6\frac{5}{8}$ percent (decrease $\frac{1}{2}$ percent); for more than five years but not more than 10 years, $6\frac{3}{4}$ percent (decrease $\frac{1}{4}$ percent); for more than 10 years but not more than 15 years, 7 percent (decrease $\frac{1}{8}$ percent); and for more than 15 years but not more than 20 years, $7\frac{1}{8}$ percent (decrease $\frac{1}{4}$ percent).

Processing plants: On loans for not more than 15 years, 8 percent (decrease $\frac{1}{4}$ percent); and for more than 15 years but not more than 20 years, $7\frac{3}{4}$ percent (no change). The rates on advances made before October 14 are unchanged.

On October 30, 1961, another revision was announced by the White Fish Authority.

Vessels not more than 140 feet, for new engines, nets, and gear: Loans not more than five years, $6\frac{1}{2}$ percent, a decrease of $\frac{1}{8}$ percent; more than five years but not more than 10, $6\frac{5}{8}$, a decrease of $\frac{1}{8}$; more than 10 years but not more than 15, $6\frac{3}{4}$, a decrease of $\frac{1}{4}$; more than 15 years but not more than 20, $6\frac{1}{8}$, a decrease of $\frac{1}{4}$.

Processing plant rates remained the same. (The Fishing News, October 27 and November 10, 1961.)

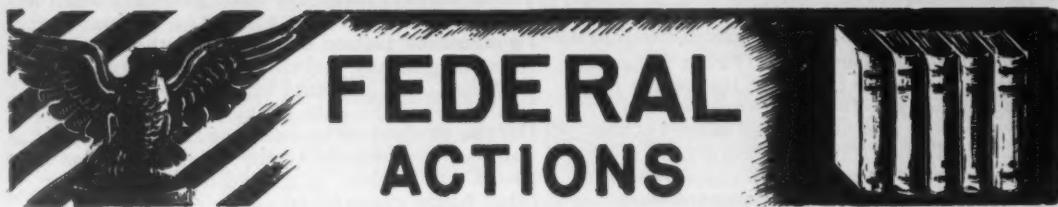
Note: See Commercial Fisheries Review, November 1961 p. 67.

TRANQUILIZER DRUG STIMULATES SHARKS

A skin-diving team fired tranquilizing drugs into sharks off Cronulla, Australia, in an attempt to stun them. Instead, the drugs stimulated the sharks.

A team member said: "It was a disappointing experiment. The drugs we used actually speeded up the sharks."

The shark hunters are experimenting with a variety of drugs in the hope of finding one which will reduce the menace of sharks to underwater fishermen and professional divers. A doctor accompanied them. (IPFC Current Affairs Bulletin, December 1960.)



FEDERAL ACTIONS

Department of the Interior

CONTRACT FOR PROCESSING ALASKA SEAL SKINS TO BE CANCELED:

The Department of the Interior announced on November 30, 1961, that it has advised the Fouke Fur Company of St. Louis, Mo., that the company's contract with the Federal Government for processing and selling Alaska fur seal skins will be terminated on December 31, 1962.

The decision to end the contract stemmed from the company's notice to the Department that it will move its operations from St. Louis to Greenville, S. C., said Administrative Assistant Secretary D. Otis Beasley. Beasley, who met with representatives of the Fouke Fur Company, said its decision to move was announced without consultation or discussion with representatives of the Department of the Interior, although about 50 percent of the firm's business by volume results from the contract with the Government.

Harvesting and processing of fur seals is part of a scientific management program in which the State of Alaska and the natives of the Pribilof Islands, where the animals are taken, are vitally concerned.

Since the signing of the fur-seal treaty in 1911 between the United States, Canada, Japan, and Russia, the United States has been responsible for administering the Alaska fur-seal industry. The scientific management of the fur seals has resulted in an increase from an estimated 125,000 animals to some 1.5 million at present. The program now permits the taking of some 90,000 seal skins annually.

The contract between the fur company and the Government has existed 40 years on a negotiated basis. Contracts have been amended many times during the period. The United States share of the seal skins has been

processed and sold by the Fouke Fur Company under the contract being terminated.



Department of State

AGENCY FOR INTERNATIONAL DEVELOPMENT

NEW GUARANTIES FOR U. S. PRIVATE ENTERPRISE OVERSEAS:

The U. S. State Department's Agency for International Development (AID), announced on October 27, 1961, that the Agency is ready to receive applications for investment guarantees under the program authorized by the Congress. The total amount of guarantees which can be written under the new program is \$240 million of which \$100 million can be used for the new all-risk guaranty program.

The Investment Guaranty Program is one of the elements authorized by the Congress in the Foreign Assistance Act of 1961 to encourage and assist U. S. private enterprise to participate in the economic and social development of friendly less-developed countries and areas.

The Investment Guaranty Program provides protection against risks peculiar to doing business abroad. The three former types of specific risk guarantees against losses resulting from inconvertibility, expropriation, and war are still available. The new program includes also losses resulting from revolution and insurrection. In addition, coverage is now, for the first time, available not only for United States firms but also for dollar investments by wholly-owned foreign subsidiaries of United States companies.

Under the expanded program, the Agency may, in certain instances, write guarantees against all risks. Such guarantees will be at least 50 percent of the dollar investment and

may go as high as 75 percent in some cases.

Specific Risk Guaranty: From the investors' point of view the most important new provisions of the 1961 Act are:

1. Eligibility for such guaranties is extended to investments by wholly-owned foreign subsidiaries of U. S. companies;
2. Protection against loss resulting from revolution or insurrection is authorized;
3. The authority to treat breach of contract by a government as expropriatory is confirmed.
4. Flexibility is authorized in working out arrangements with host governments for institution of the program.

All Risk Guaranty: In addition to the basic, specific risk guaranty authority described above, AID will in those special and specific cases which occupy an agreed, high priority position in the host country's development plan, issue guaranties of not more than 75 percent, more commonly 50 percent, against loss of any dollar investment and against any risk, including normal business-type risks.

Among the criteria which will be taken into account in reviewing a project are:

1. Whether the activity gives reasonable promise of contributing to the development of economic resources or to the increase of production capacities in furthering the purposes of this title;
2. The extent to which the recipient country is showing a responsiveness to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures; and
3. The possible effects upon the United States economy, with special reference to areas of substantial labor surplus, of the guaranty involved.

It is contemplated that this authority, which is new to the Foreign Aid Program, will be used to guarantee general economic development projects with emphasis on those projects which further social progress and the development of small, independent busi-

ness enterprises. No such guaranty shall exceed \$10 million; the total face amount of guaranties issued under this authority outstanding at any one time shall not exceed \$90 million. No guaranty shall exceed the total value as of the date of the investment made in the project, plus annual earnings or profits on said investment to the extent provided by such guaranties. It should be kept in mind that funds guaranteed under this title shall not be loaned or reloaned at rates of interest excessive or unreasonable for the borrower.

General economic development projects are defined as those projects, agricultural as well as industrial, in which private capital desires to participate which further develop economic resources and productive capacities of less developed friendly countries and areas. Consideration would also be given to projects such as food processing plants, etc.

AID will give consideration to guaranteeing investments which lead to the development of small independent business enterprises. In this connection investors are reminded of the considerable number of development banks in existence in less developed countries which are supported in part by the AID agency, and which are equipped to assist in the financing of deserving small and medium size ventures.

Note: For a detailed description of the guaranties available, general criteria to be utilized in their administration, and procedures for applying for guaranties, write to the Investment Guaranty Division Agency of International Development, U. S. Department of State, Washington 25, D. C.



Eighty-Seventh Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect fisheries and allied industries are reported. Introduction, referral to committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as signature into law or other final disposition are covered.



The second session of this Congress convened on January 10, 1962, after this issue went to press.

FISH AND WILDLIFE SERVICE COMMISSIONER: MacIntyre, Pautzke, and Ross Nominations (Hearings before the Committee on Commerce, United States Senate, 87th Congress, 1st Session, on Nominations of Everett MacIntyre, Federal Trade Commission, July 26 and August 1, 1961; Clarence F. Pautzke, Fish and Wildlife Service, June 7, 1961 and Charles R. Ross, Federal Power Commission, September 21, 1961), 31 pp., printed. Includes nomination of Clarence F. Pautzke, Commissioner of U. S. Fish and Wildlife Service, with statements of one of the Washington Senators and the nominee, Mr. Pautzke.

FOREIGN TRADE: On December 4, the Subcommittee on Foreign Economic Policy of the Joint Economic Committee began hearings. In connection with the hearings, reports have been published by the Committee on the following subjects: subjects:

The European Economic Community and the United States, Joint Committee Print (87th Congress, 1st Session, Report by Robert R. Bowie and Theodore Geiger to Subcommittee on Foreign Economic Policy of the Joint Economic Committee, Congress of the United States), 77 pp., printed. This report is an analysis of the implications of European integration and the Common Market for U. S. policy.

The Task for 1962: A Free World Community, Joint Committee Print (87th Congress, 1st Session, Report by Henry S. Reuss to the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, Congress of the United States), 13 pp., printed. The report covers the three central economic problems of the free world--trade, payments, and aid--and how they may best be solved by sovereign nations working together.

Trade Adjustment in Theory and Practice, Joint Committee Print (87th Congress, 1st Session, Report by Otto R. Reischer to the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, Congress of the United States), 106 pp., printed. This study examines various methods designed to minimize economic dislocations caused by increased competitive imports. Discusses the significance of adjusting to increased competitive imports; economic and public policy aspects of trade adjustment; foreign examples of

readaptation; previous contributions to the discussion of trade adjustment; organizational and administrative aspects of a trade adjustment program; trade adjustment in manufacturing; trade adjustment in agriculture; and trade adjustment in mining.

Trade Restraints in the Western Community With Tariff Comparisons and Selected Statistical Tables Pertinent to Foreign Economic Policy, Joint Committee Print (87th Congress, 1st Session, Report to the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, Congress of the United States), 66 pp., printed. The purpose of this report is to present a variety of available statistical information which may be pertinent to considerations of foreign economic policy. Part I of the report discusses comparisons of restraints on trade and capital investment presently imposed by the countries of the industrialized West, plus Australia, New Zealand, and Japan. Part II presents a compilation of selected statistical tables dealing with the volume of international trade, foreign investment, wage and productivity rates, and similar subjects.

United States Commercial Policy--A Program for the 1960's, Joint Committee Print (87th Congress, 1st Session, Report by Peter B. Kenento to the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, Congress of the United States), 45 pp., printed. This study examines the United States commercial policy background, i. e., the scope of commercial policy; the tacit compromise on trade policy; the deadlock in tariff bargaining; the new challenge to trade policy and the need for radical reform. It also discusses the strategy of trade liberalization; the tactics of trade liberalization; tariffs, wages, and employment; tariffs and the U. S. balance of payments; and other aspects of commercial policy.

PORTLAND HARBOR, MAINE, IMPROVEMENT: H. Doc. 216, Portland Harbor, Maine, Letter from the Chief of Engineers, Department of the Army, Dated April 26, 1961, submitting a report, together with accompanying papers and an illustration, on a review of reports on Portland Harbor, Maine, requested by a resolution of the Committee on Public Works, House of Representatives, adopted August 20, 1957.

FIRST CLAM CANNERY IN UNITED STATES

"Burnham and Morrill are credited with establishing the first clam cannery in the United States in 1878 at Pine Point, Maine. The pack of canned clam products was small for some years as considerable difficulty was experienced with discoloration but production slowly increased when this difficulty was overcome. P. F. Halferty developed a method for canning minced razor clams about 1900, building up a commercial clam canning industry in Oregon, Washington, and Alaska."

--Principles and Methods in the Canning of Fishery Products, Research Report No. 7, p. 4, U. S. Fish and Wildlife Service.

FISHERY INDICATORS

CHART I - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

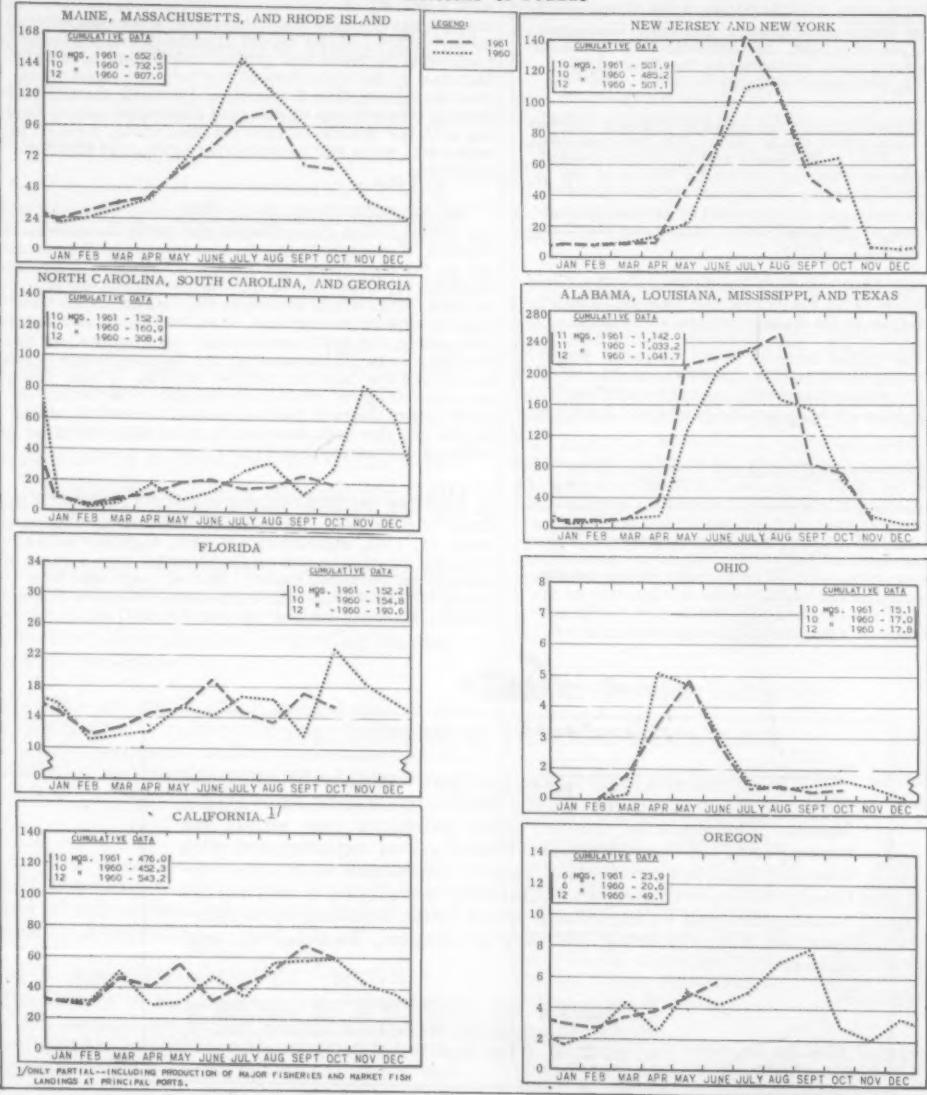
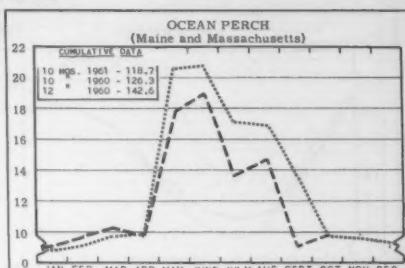
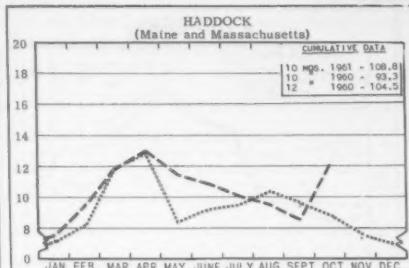
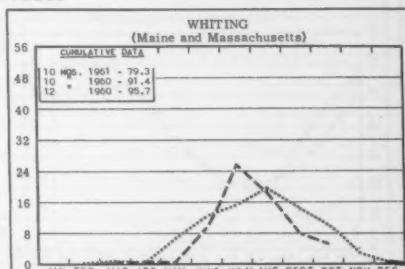
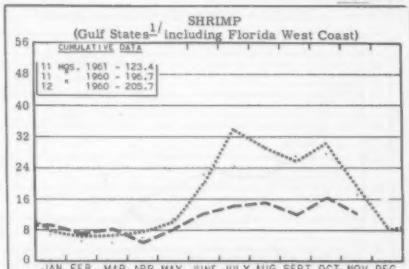


CHART 2 - LANDINGS for SELECTED FISHERIES

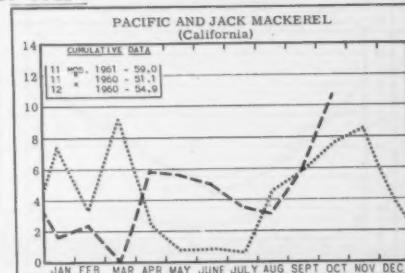
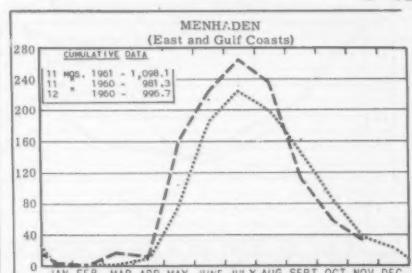
In Millions of Pounds



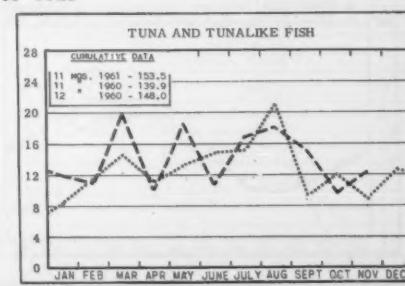
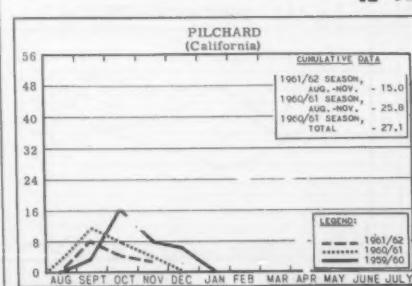
In Millions of Pounds

1/LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COM-
PLETE.

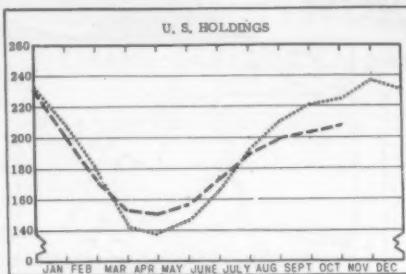
In Thousands of Tons



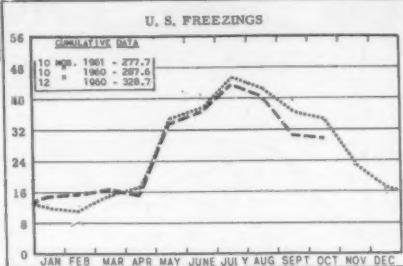
In Thousands of Tons



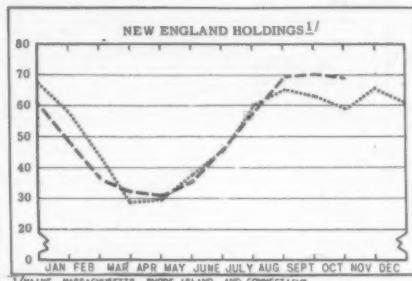
**CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS
of FISHERY PRODUCTS ***
In Millions of Pounds



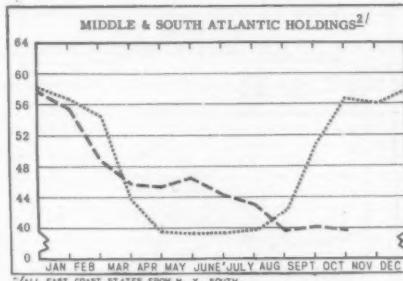
LEGEND:
— 1961
··· 1960



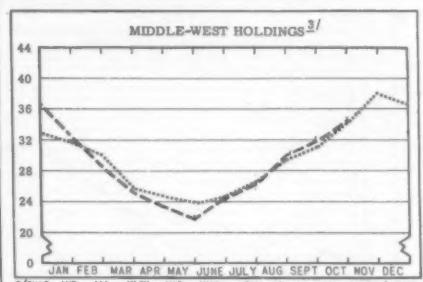
CUMULATIVE DATA
10 MGR. 1960 = 277.7
11 " " 1960 = 326.6
12 " " 1960 = 326.7



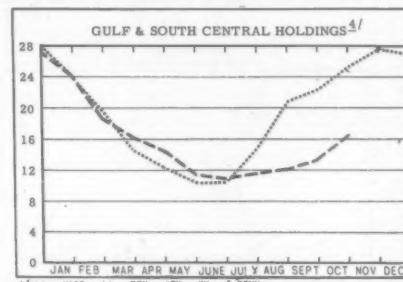
^{1/}MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT



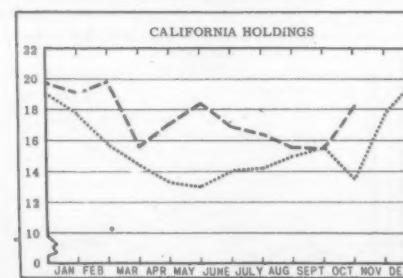
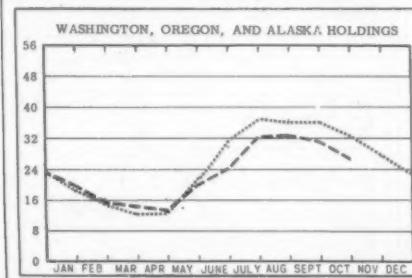
^{2/}ALL EAST COAST STATES FROM N. Y. SOUTH.



^{3/}OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., KAN., NEBR., NEV., & R.I.



^{4/}ALA., MISS., LA., TEX., ARK., KY., & TENN.



* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

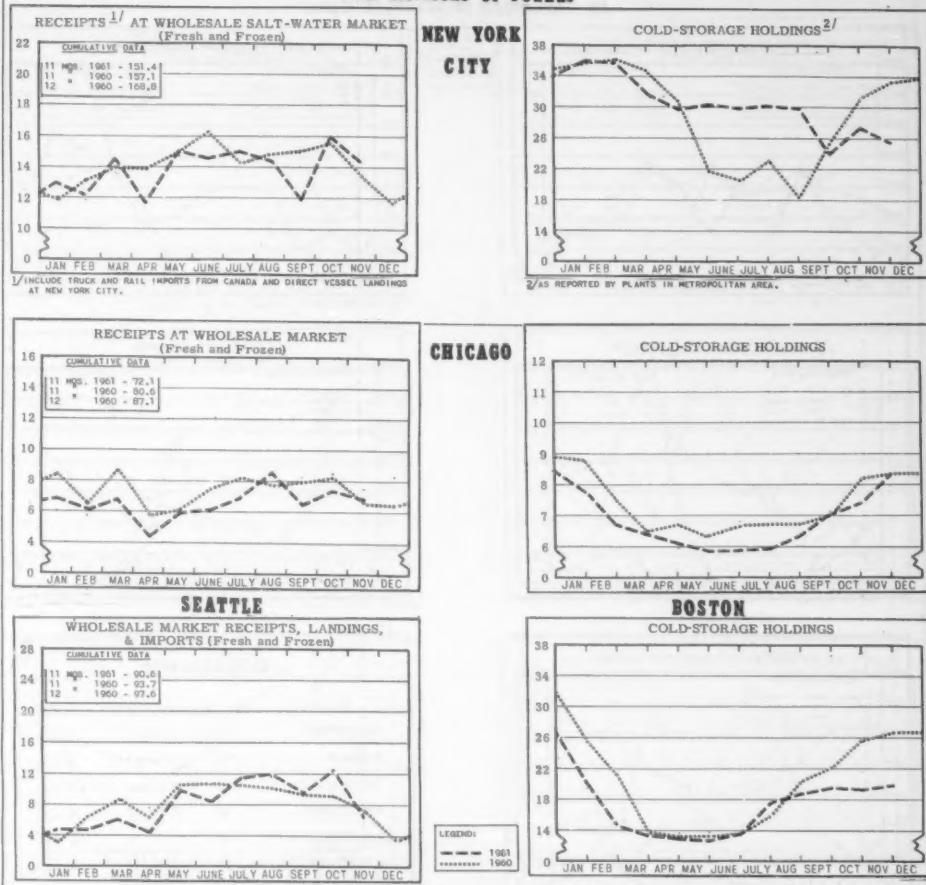


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

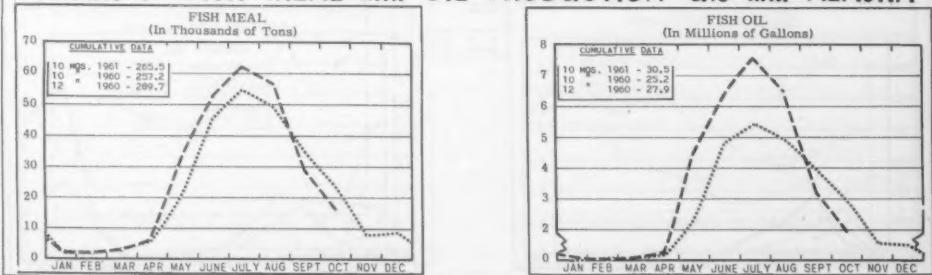
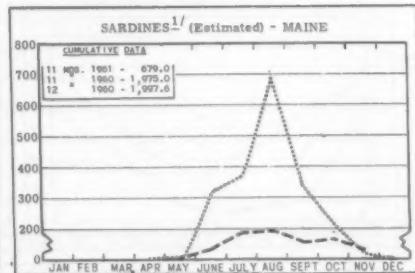
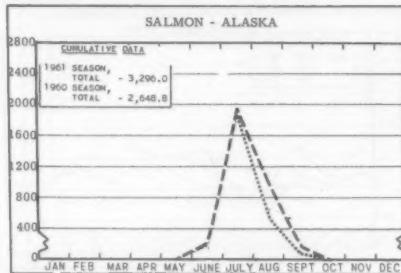
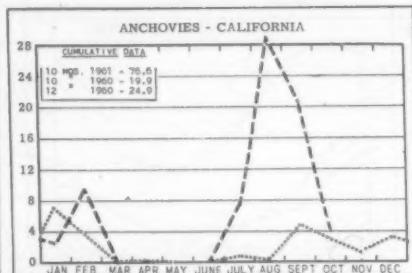
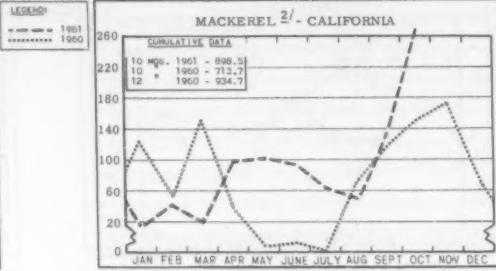
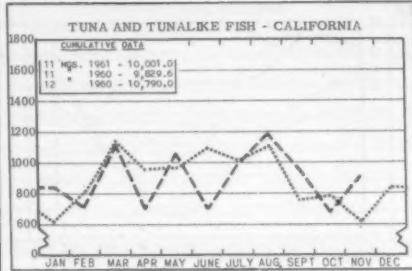


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	½ drawn	3½ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.

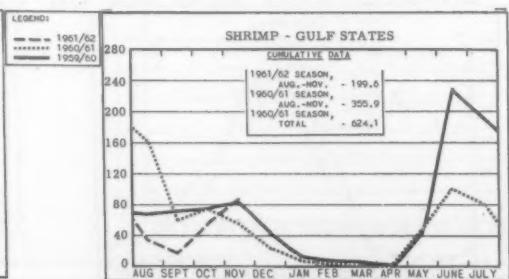
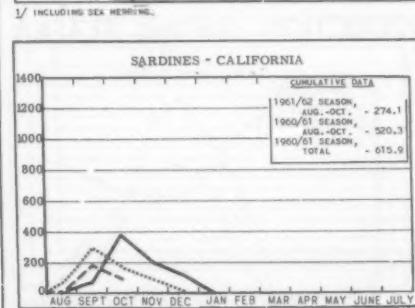
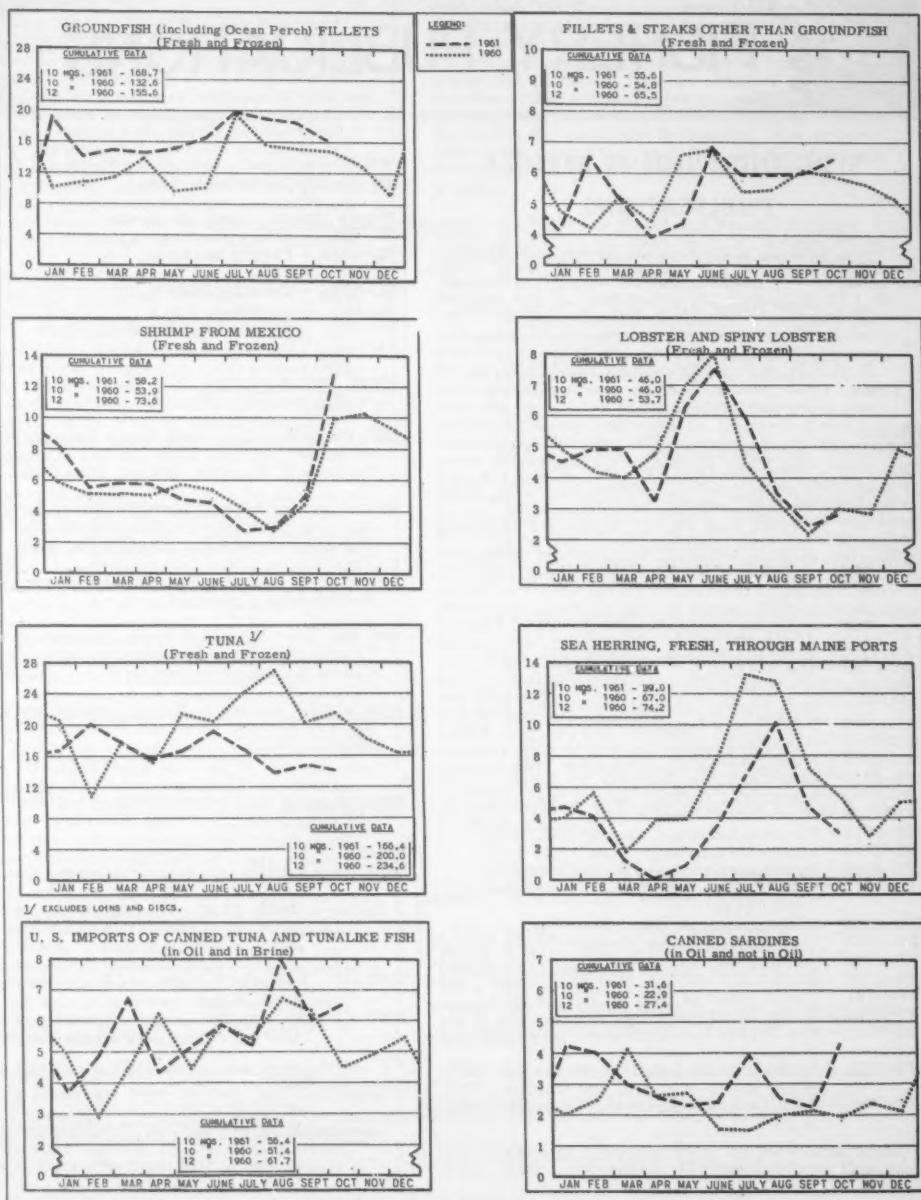
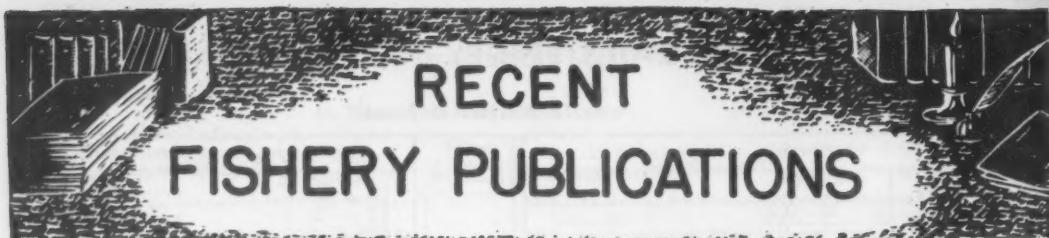


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U.S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D.C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SL - BRANCH OF STATISTICS LIST OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-2680	Michigan Landings, July 1961, 3 pp.
CFS-2681	Wisconsin Landings, July 1961, 2 pp.
CFS-2688	Massachusetts Landings, June 1961, 5 pp.
CFS-2695	Shrimp Landings, May 1961, 6 pp.
CFS-2697	Frozen Fish Report, September 1961, 8 pp.
CFS-2698	Alabama Landings, May 1961, 3 pp.
CFS-2699	Georgia Landings, August 1961, 2 pp.
CFS-2700	South Carolina Landings, August 1961, 2 pp.
CFS-2701	Fish Meal and Oil, August 1961, 2 pp.
CFS-2702	Texas Landings, June 1961, 3 pp.
CFS-2703	Florida Landings, August 1961, 8 pp.
CFS-2704	Maine Landings, August 1961, 4 pp.
CFS-2705	Michigan Landings, August 1961, 3 pp.
CFS-2706	New Jersey Landings, July 1961, 4 pp.
CFS-2707	New Jersey Landings, August 1961, 4 pp.
CFS-2708	Wisconsin Landings, August 1961, 2 pp.
CFS-2709	Shrimp Landings, June 1961, 6 pp.
CFS-2710	Ohio Landings, August 1961, 2 pp.
CFS-2711	Maryland Landings, August 1961, 3 pp.
CFS-2712	Minnesota Landings, August 1961, 2 pp.
CFS-2713	Virginia Landings, August 1961, 4 pp.
CFS-2714	California Landings, June 1961, 4 pp.
CFS-2715	Louisiana Landings, April 1961, 2 pp.
CFS-2716	Fish Sticks and Portions, July-September 1961, 3 pp.
CFS-2717	Texas Landings, July 1961, 4 pp.
CFS-2718	New York Landings, August 1961, 5 pp.
CFS-2719	Massachusetts Landings, July 1961, 5 pp.
CFS-2720	Louisiana Landings, May 1961, 2 pp.
CFS-2721	Texas Landings, August 1961, 3 pp.
CFS-2722	Rhode Island Landings, August 1961, 4 pp.
CFS-2725	New Jersey Landings, September 1961, 4 pp.
CFS-2726	North Carolina Landings, September 1961, 4 pp.
CFS-2727	South Carolina Landings, September 1961, 2 pp.

Wholesale Dealer in Fishery Products, 1961 (Revised):
SL-3 - Massachusetts, 9 pp.

Firms Canning, 1960 (Revised):
SL-102 - Maine Sardines, 1 p.
SL-102A - Pacific Sardines, 1 p.
SL-103 - Tuna, 2 pp.
SL-103A - Tunalike Fishes, 1 p.
SL-104 - Mackerel, 1 p.
SL-108 - Salmon Eggs for Bait, 1 p.
SL-110 - Oysters, 2 pp.

Firm Manufacturing, 1960 (Revised):
SL-160 - Menhaden Products, 2 pp.

SSR-Fish. No. 378 - Drift Bottle Records for the Gulf of Maine, Georges Bank and Bay of Fundy, 1956-58, by Dean F. Bumpus, 129 pp., illus., May 1961,

SSR-Fish. No. 382 - A Modified Beckman Model DU Spectrophotometer for Seagoing Use, by Robert W. Holmes and Robert J. Linn, 8 pp., illus., July 1961.

Sep. No. 633 - Aerial Fish Spotting in the United States Commercial Fisheries.

Sep. No. 634 - Effects of Some Pesticides on Eggs and Larvae of Oysters (*Crassostrea virginica*) and Clams (*Venus mercenaria*).

Literature Citations in Publications of the Fish and Wildlife Service, by Faxon W. Cook, Circular 115, 18 pp., 1961.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-3	Legislative Actions Affecting Commercial Fisheries, 87th Congress, 1st Session, 1961, 23 pp., processed. A report of congressional legislative actions directly or indirectly affecting or of interest to commercial fisheries and allied industries.
MNL-48	Pakistan's Fisheries Statistical Report, 1960, 4 pp.
MNL-61	Shrimp and Lobster Fisheries of Costa Rica (Survey Period: April 24 to May 6, 1961), 6 pp.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE FROM THE SPECIFIC OFFICE MENTIONED.

(Baltimore) Monthly Summary--Fishery Products, September 1961, 8 pp. (Market News Service, U. S.

Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary.

Part I - Fishery Products Production and Market Data, September 1961, 16 pp. (Market News Service, U. S. Fish and Wildlife Service, P. O. Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, September 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Galveston and Brownsville, Texas, from Mexico; foreign sales; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, October 1961, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New England Fisheries--Monthly Summary, September 1961, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

Receipts of Fresh and Frozen Fishery Products at Baltimore's Wholesale Fish Market, 1960, by James A. Coyne, 60 pp., processed, November 1961. (Available free from the U. S. Fish and Wildlife Service, Market News Service, 103 South Gay Street, Baltimore 2, Md.) The first part of this report is

a summary of receipts of fresh and frozen fishery products on the Baltimore Wholesale Fish Market in 1960, giving comparisons with receipts in 1959. Includes information on crab meat, hard crabs, oysters, striped bass, scup (porgy), hake, whiting, butterfish, shad, spot (lafayette), red hake (ling), fluke, and croaker. Also covers pasteurization of crab meat, Maryland's tidewater fishery laws, and the Maryland 1960 oyster season. The second part of the report covers statistics on receipts of fresh and frozen fishery products, such as species by states and countries; fish and shellfish totals by months, states and countries by species; domestic and imported totals by months; species by months; and states and countries by months. Also covers 1960 price ranges for fresh fish and shellfish, and conversion factors used to convert shellfish to pounds.

Receipts and Prices of Fresh and Frozen Fishery

Products at Chicago, 1960, by G. A. Albano, 67 pp., processed, November 1961. (Available free from the Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) In the analysis of receipts of fishery products at Chicago, the author discusses the drop in 1960 fishery products receipts and carload receipts at Chicago. He also discusses sources of receipts, trends in fishery products transportation, receipts by months, receipts by species and varieties, lake trout and whitefish fishery and receipts, trends in Great Lakes commercial fishery, cold-storage inventories, imports of fresh and frozen fresh-water fish from Canada, imports of and selected frozen fishery products. Also covers trends in frozen halibut marketing, fish sticks and portions, frozen shrimp market trends, shrimp landings and imports, standards for grades of frozen raw headless shrimp, and calico scallop grounds located off Florida Coast. Also included is a table giving the names, classifications, and approximate weights of certain fishery products as used in the Chicago wholesale markets. The second section presents statistical data on fresh and frozen fishery products receipts at Chicago by species and by states and provinces of origin, states and provinces by species, species by months, states and provinces by months, totals by species, and totals by states and provinces. Receipts are tabulated by method of transportation (truck, express, and freight). A table shows the monthly range of wholesale prices of some of the leading varieties of fresh and frozen fishery products handled in the Chicago market.

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES, 101 SEASIDE AVE., TERMINAL ISLAND, CALIF.:

The Study on the Color of the Fishing Net. II--Behavior of Fish Schools in the Neighborhood of a Colored Net, by Kenji Kanda, Atushi Koike, and Mitio Ogura, 5 pp., processed, October 1961. (Translated from Japanese, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 10, pp. 617-620, 1958.)

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, SEATTLE BIOLOGICAL LABORATORY, 2725 MONTLAKE BLVD., SEATTLE 2, WASH.

A New Method of Catching Fish, by N. F. Chernigin, 8 pp., Illus., processed. (Translated from Russian

Rybnoe Khoziaistvo, vol. 32, no. 2, February 1956, pp. 22-29.)

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Commercial Fishing Gear of the United States, by William H. Dumont and G. T. Sundstrom, Circular 109, 68 pp., illus., processed, 40 cents. A well illustrated publication showing the various types of fishing gear used in harvesting America's five-billion-pound annual fish catch. Containing dozens of easy-to-follow drawings, the booklet should appeal especially to those interested in the development and utilization of fishing gear. The introduction explains that while fishing is an age-old occupation, fishing gear was developed slowly by trial and error. In the past 60 years mechanization and use of more efficient equipment have revolutionized the fishing industry. The change in fishing gear from the simple net to the present huge purse seines which cost as much as \$40,000 is emphasized. The booklet also points out that a million-dollar boat for fish harvesting is not unusual now and that some large English and Soviet factoryships, designed as stern trawlers to fish, process, and freeze the product at sea, cost several million dollars each.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ALGAE:

"Adriatic Algae as an Additional Forage," by O. Jurko, article, *Nova Proizvodnja*, vol. 11, no. 6, 1960, pp. 322-325, printed in Serbo-Croatian. *Nova Proizvodnja*, Ljubljana, Yugoslavia.

The Ecology of Marine Plants of Crystal Bay, Florida, by Ronald C. Phillips, contribution no. 51, 10 pp., illus., printed. (Reprinted from *The Quarterly Journal of the Florida Academy of Sciences*, vol. 23, no. 4, pp. 328-337, December 1960.) Florida State Board Conservation Marine Laboratory, Bayboro Harbor, St. Petersburg, Fla.

ANCHOVETAS:

Tagging of Anchovetas (CETENGRaulis MYSTICE-TUS) in the Gulf of Panama, by Edward F. Klima and William H. Bayliff, 6 pp., illus., printed. (Reprinted from *Proceedings of the Gulf and Caribbean Fisheries Institute*, Thirteenth Annual Session, pp. 151-156, Nov. 1960.) Gulf and Caribbean Fisheries Institute, 1 Rickenbacker Causeway, Virginia Key, Miami, Fla.

BARENTS SEA:

"Causes of Changes in the Fauna and the Biological Productivity of the Barents Sea over a Period of Many Years," by M. M. Kamshilov, article *Trudy Okeanograficheskoi Komissii*, vol. 10, no. 4, 1960, pp. 42-47, printed in Russian. *Trudy Okeanogra-*

ficheskoi Komissii, Akademii Nauk SSSR, Moscow, U. S. S. R.

BENELUX COUNTRIES:

Import Tariff System of Belgium, Netherlands, and Luxembourg, WTIS Part 2, Operations Report No. 61-71, 2 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., October 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

BONEFISH:

A Contribution to the Life History, Biology and Geographical Distribution of the Bonefish, ALBULA VULPES (Linnaeus), by Elizabeth C. Alexander, Dana Report No. 53, 51 pp., illus., printed, Kr. 15 (about US\$2.20). Andr. Fr. Host & Son, Bredgade 35, Copenhagen K, Denmark, 1961.

BRAZIL:

Import Tariff System of Brazil, WTIS Part 2, Operations Report No. 61-57, 4 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., September 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This report presents information on units of currency, weights, and measures; import regulations; bases of specific and ad valorem duties; customs duties and surtaxes; sales and other internal taxes; consular documents and fees; and related subjects.

"Introducao ao Conhecimento da Pesca Maritima no Nordeste Brasileiro" (Introductory Study of the Marine Fishery of Northeast Brazil), by M. P. Paiva, article, *Revista Nacional de Pesca*, vol. 1, no. 5, 1960, pp. 18-20, printed in Portuguese. *Revista Nacional de Pesca*, Sao Paulo, Brazil.

"Sinopse sobre a Pesca Interior no Brasil" (Synopsis of the Fresh-Water Fisheries of Brazil), by M. P. Paiva, article, *Revista Nacional de Pesca*, vol. 1, no. 6, 1960, pp. 41-42, printed in Portuguese. *Revista Nacional de Pesca*, Sao Paulo, Brazil.

CALIFORNIA:

California Cooperative Oceanic Fisheries Investigations, vol. 8, 130 pp., illus., printed. California Department of Fish and Game, 722 Capitol Ave., Sacramento, Calif., January 1, 1961. This report consists of two sections. The first contains a brief review of the administrative and research activities of the California Cooperative Oceanic Fisheries Investigations during the period July 1, 1959-June 30, 1960, a description of the fisheries, and list of publications arising from the program. The second section is comprised of original scientific contributions which are either the direct results of the research programs, or represent research directly pertinent to resource development in the pelagic realm off California.

California Ocean Fisheries Resources to the Year 1960, 77 pp., illus., printed. California Department of Fish and Game, 722 Capitol Ave., Sacramento, Calif. A preliminary report of the work of the California Department of Fish and Game in advancing the ability to provide profit from and to preserve the resources of the ocean bordering Californian shores for the benefit of California sport and com-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

mercial fishermen. Concerns itself only with marine resources.

CANADA:

Fisheries Statistics of Canada, 1959 (Canada Summary), 51 pp., printed in French and English, 75 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, September 1961. This report provides a summary of the Canadian fisheries, arranged to show separately the three main fisheries areas--Atlantic, Pacific, and Inland. Also contains statistical tables on catch of fish, products, employment in the primary industry, fishing craft and gear.

Journal of the Fisheries Research Board of Canada, vol. 18, no. 4, 1961, 156 pp., illus., printed, C\$1.50. Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, the following articles: "Proximate Composition of Canadian Atlantic Fish. I--Variation in Composition of Different Sections of the Flesh of Atlantic Halibut (*Hippoglossus hippoglossus*); II--Mackerel, Tuna and Swordfish," by A. Mannan, D. L. Fraser, and W. J. Dyer; "The Amino Acid Composition of Cod Tropomyosin," by P. L. Hoogland and others; "Observations on the Ecology of the Pacific Cod (*Gadus macrocephalus*) in Canadian Waters," by K. S. Ketchen; "Two Epidemics of Apparent Kidney Disease in Cultured Pink Salmon (*Oncorhynchus gorbuscha*)," by Gordon R. Bell; "Muscle Proteins of Pacific Salmon (*Oncorhynchus*). I--A Note on the Separation of Muscle Proteins Soluble in Low Ionic Strength Salt Solutions," by H. Tsuyuki and Eve Roberts; and "Temperature and the Biochemical Processes Occurring during Rigor Mortis in Cod Muscle," by Doris I. Fraser, Somsee Punjamapirom, and W. J. Dyer.

CARP:

"Crossbreeding Carps," by I. V. Kiselev, article, Agrobiologia, no. 2, March-April 1961, pp. 206-216, printed in Russian. Agrobiologia, Moscow, U.S.S.R.

"Effect of Breeding on Changes in Certain Characteristics of Carp," by V. A. Movchan, article, Agrobiologia, no. 2, March-April 1961, pp. 217-221, printed in Russian. Agrobiologia, Moscow, U.S.S.R.

"Results of Raising Wild and Pond Carp Crosses in Ponds Contaminated by Hemorrhagic Septicemia," by I. M. Karpenko and M. S. Sventsits'kyl, article, Visnyk Sil' S'Kohospodar'skoi Nauky, vol. 4, no. 1, January 1961, pp. 116-117, printed in Russian. Visnyk Sil' S'Kohospodar'skoi Nauky, Kiev, U.S.S.R.

"Using Antibiotics for the Prevention and Treatment of Hemorrhagic Septicemia in Carp," by O. K. Scherbina and others, article, Visnyk Sil' S'Kohospodar'skoi Nauky, vol. 4, no. 2, February 1961, pp. 89-92, printed in Russian. Visnyk Sil' S'Kohospodar'skoi Nauky, Kiev, U.S.S.R.

COALFISH:

"Biology of the Coalfish (*Pollachius virens* L.) in the Barents Sea," by N. V. Mironova, article, Trudy Okeanograficheskoi Komissii, vol. 10, no. 4, 1960, pp. 55-61, printed in Russian. Trudy Okeanograficheskoi Komissii, Akademii Nauk SSSR, Moscow, U.S.S.R.

COMMUNIST CHINA:

Development in the Fishing Industry in Communist China, by Ajia Kenkyu and Ajia Keizai Junpo, JPRS 9817, 49 pp., processed. (Translated from Japanese Ajia Kenkyu, No. 271, June 6, 1961, pp. 2-9; No. 272, June 13, 1961, pp. 7-10.) Photocopies of this report may be purchased from: Photoduplication Service, Library of Congress, Washington 25, D. C.

CONCHS:

Studies on the Crown Conch MELONGENA CORONA Gmelin, by Ralph R. Hathaway and K. D. Woodburn, Contribution No. 41, 21 pp., illus., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 11, no. 1, pp. 45-65, March 1961.) Marine Laboratory State Board of Conservation, St. Petersburg, Fla.

CONSERVATION:

Marine Fisheries: Their Conservation and Their Potential, by C. E. Lucas, Marine Reprint, printed. (Reprinted from Advancement of Science 1961.) Marine Laboratory, Department of Fisheries for Scotland, Aberdeen, Scotland, 1961. Describes the sea as the source of valuable marine fisheries. In discussing the conservation and potential of the resource, the author points out that the yield, about 30 million tons of animal protein a year throughout the world, is small in comparison with the yield from agriculture, but it has great potentialities. He thinks it can be doubled by the simple application of present knowledge and techniques, but that further knowledge would open the way to a much larger harvest.

DAMS AND FISHERY RESEARCH:

Progress Report on Fisheries Engineering Research Program, 156 pp., illus., processed. U. S. Army Engineer Division, North Pacific, Corps of Engineers, 210 Custom House, Portland 9, Oreg., July 1960. Contains papers on "Guiding Downstream Migrant Salmon and Steelhead Trout;" "Results of a Tagging Program to Enumerate the Numbers and to Determine the Seasonal Occurrence of Anadromous Fish in the Snake River and its Tributaries;" "Enumeration Study Upper Columbia and Snake Rivers;" "Evaluation of the Ability of an Artificial Outlet to Attract Downstream Migrant Salmonids from the Reservoir of Lookout Point Dam;" "The Control of Downstream Migrants by Means of Mechanical Screens;" "Fishway Attraction Water Supply Study;" "Effect of Structures at Main Columbia River Dams on Downstream Migration of Fingerlings;" "The Status of Electrical Fish Guiding Experiments;" "Research Relating to McNary Supplemental Spawning Channel;" "Research on Fishway Problems;" "A Study to Determine the Effects of Electricity on Salmon and Steelhead Trout;" "A Study to Investigate the Effects of Fatigue and Current Velocities on Adult Salmon and Steelhead Trout;" "Research Relating to Mortality of Downstream Migrant Salmon Passing McNary and Big Cliffs Dams;" "Powerhouse Fish Collection System and Transportation Flows, Bonneville Dam;" "Submerged Orifice Research Powerhouse Fish Collection System, Bonneville Dam;" "Buoyant Submerged Orifice Research;" "An Investigation of the Effect of The Dalles Dam upon Migration Rates of Adult Salmonids, 1956 and 1957;" "Experimental Studies on the Survival of the Early Stages of Chinook Salmon after Varying Exposures to Upper Lethal Temperatures;" and "Fish Passage through Turbines."

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

DENMARK:

Fiskeriberetning for Aret 1960 (The Ministry of Fisheries Annual Report for 1960), 135 pp., illus., printed in Danish with English summary. Fiskeriministeriet, 1 Kommission Hos. G.E.C. Gad, Copenhagen, Denmark. A report on the Danish fishing industry during 1960. Includes information and statistical tables on number of fishermen employed, fishing fleet, fishing gear, landings of fish and shellfish. Also contains information on fish farms; production of canned, filleted, and smoked fish; and foreign trade in fishery products.

Journal du Conseil, vol. 26, no. 3, September 1961, 106 pp., illus., printed. Conseil Permanent International pour l'Exploration de la Mer, Charlottenlund Slot, Denmark. Includes, among others, these articles: "An Automatic Method of Counting Fish Echoes," by R. B. Mitson and R. J. Wood; "The Effect of Pressure on the Survival and Distribution of Larval and Young Fish," by H. M. Bishai; "Otolith Studies of Southern North Sea Herring," by D. F. S. Raitt; "Some Unusual Otolith Types on the Bloden Ground in 1958 and Their Subsequent Occurrence in the Adult Fisheries," by D. F. S. Raitt; and "The Experimental Modification of Meristic Characters in Herring (*Clupea harengus* L.)," by G. Hempel and J. H. S. Blaxter.

DISTRIBUTION OF FISH:

"Intermittent Distribution of Fishes and Large Fluctuations of the Ocean Level," by G. U. Lundberg, article, *Trudy Okeanograficheskoi Komissii*, vol. 10, no. 4, 1960, pp. 14-16, printed in Russian. *Trudy Okeanograficheskoi Komissii*, Akademii Nauk SSSR, Moscow, U.S.S.R.

DOLPHINS:

"Simulated Wave-Riding Dolphins," by Byrne Perry, A. J. Acosta, and Taras Kicienuk, article, *Nature*, vol. 192, no. 4798, October 14, 1961, pp. 148-150, illus., printed. St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

EUROPEAN FREE TRADE ASSOCIATION:

First Annual Report of the European Free Trade Association, for the Period ending 1st July, 1961, 40 pp., printed. European Free Trade Association Information Office, 711 Fourteenth St. NW, Washington 5, D. C.

EXPORTS:

Preparing Shipments to Senegal, WTIS Part 2, Operations Report No. 61-55, 8 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., August 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

Brazil, WTIS Part 2, Operations Report No. 61-55, 12 pp., printed, 10 cents, September 1961.

Singapore, WTIS Part 2, Operations Report No. 61-59, 8 pp., printed, 10 cents, September 1961.

Turkey, WTIS Part 2, Operations Report No. 61-51, 8 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., August 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

FAROES ISLANDS:

Development of the Faroese Fishing Fleet, Faroe in, Figures no. 15, 6 pp., printed. Faero Amts Sparekasse, Copenhagen, Denmark, September 1961. Reviews developments in the Faroese fishing fleet and summarizes local Government budgets, 1952-1962. It also contains current data on fish production and exports.

FISH BEHAVIOR:

"Role of Sense Organs in the Feeding of *Sargus anularis* L. and Some Characteristics of Its Schooling Behavior," by M. P. Aronov, article, *Trudy Sevastopol'skai Biologicheskai Stantsii*, no. 13, 1960, pp. 266-274, printed in Russian. *Trudy Sevastopol'skai Biologicheskai Stantsii*, Akademii Nauk SSSR, Leningrad, U.S.S.R.

"Studying the Adaptive Significance of Schooling Behavior in Fishes," by B. P. Mantefel' and D. V. Radakov, article, *Uspekhi Sovremennoi Biologii*, vol. 50, no. 3, November-December 1960, pp. 362-379, printed in Russian. *Uspekhi Sovremennoi Biologii*, Akademii Nauk SSSR, Moscow, U.S.S.R.

FISH CULTURE:

Howdowia Ryb Stawowych (Fish Cultivation in Ponds), by W. Goscinski, 565 pp., illus., printed in Polish. Pod Red. W. Goscinskiego (i) A. Rudnickiego, Państwowe Wydawn. Rolnicze i Lesne, Warsaw, Poland, 1956.

FISH MEAL:

Fish Meal Boosts Broiler Growth, by Edgar C. Quillin, 3 pp., illus., printed. (Reprinted from the *Eastern Feed Merchant*, September 1961.) Feed Merchant, Garden State Publishing Co., Garden State Bldg., Sea Isle City, N. J.

FISHERY COOPERATIVES:

Cooperation for Fishermen, by Margaret Digby, 136 pp., illus., printed, 75 cents. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961. A study based on the working papers and proceedings of the Technical Meeting on Fishery Cooperatives, jointly sponsored by FAO and International Labour Office in Naples in May 1959. It deals comprehensively with various aspects of the cooperative organization and management in fisheries. According to the author, "Cooperation among fishermen is today fairly widespread in the leading fishing countries of Europe, in North America, Japan and Australia, but it does not often dominate the industry as farmers' cooperatives frequently dominate agriculture. There are also many countries where it is still virtually unknown." In this study an attempt was made to discover what forms of cooperation have in fact been found applicable to the fishing industry; what conditions have led to their adoption, and thereafter promoted or hindered their success; how in practice each type of organization works and what are its difficulties and opportunities, and what part has been played in cooperative development by government or by deliberate education and leadership from outside the fishing industry.

FISHERY ECONOMICS:

"Economic Problems of the Management of the Pond Fisheries in Poland with Particular Consideration

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

of the State Management," by H. Skrobisz, article, *Wies Wspolczesna*, vol. 5, no. 2, February 1961, pp. 86-95, printed in Polish, *Wies Wspolczesna*, "Miesiecznik Ruchu Ludowego, Warsaw, Poland.

"Results of the Cooperative Relations between Individual Fishermen and the Economic Fishing Organizations," by E. Parun, article, *Morsko Ribarstvo*, vol. 12, no. 10, October 1960, pp. 153-155, printed in Serbo-Croatian, *Morsko Ribarstvo*, Association of Marine Fisheries in Yugoslavia, 3 V. Bagota, Rijeka, Yugoslavia.

FLORIDA:

Summary of Florida Commercial Marine Landings, 1960, and an Analysis of the Catch and Effort of Certain Species, by Albert Rosen and Richard K. Robinson, Marine Fisheries Research No. 61-2, 32 pp., illus., printed, Florida State Board of Conservation, W. V. Knott Bldg., Tallahassee, Fla., July 1961. Presents a summary of Florida's commercial landings of marine products for 1960. The fisheries for shrimp, mullet, Spanish mackerel, and other fish and shellfish are covered. Although the 1960 catch represented a decline of about 8 percent, compared with the previous year, the value was 16 percent higher than that of 1959. Includes a number of statistical tables giving data on landings and value of catches by species and by counties during 1960.

FOOD AND AGRICULTURE ORGANIZATION:

Fish, the Great Potential Food Supply, by D. B. Finn, World Food Problems No. 3, 50 pp., illus., printed, 50 cents. Food and Agriculture Organization of the United Nations, Viale della Terme di Caracalla, Rome, Italy, 1960. (For sale in United States by the Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N.Y.) Discusses the increasing world catch of fish, problems which hinder and hamper fish production, some examples of work and progress in fisheries, and increasing the supply of fish. According to the author, it is estimated that only a fraction of 1 percent of the food consumed by humans is fish, although the oceans and seas cover more than 70 percent of the earth's surface. This great expanse of water, which is about 90 million square miles, is about as productive as arable land, and it should be possible to obtain increased quantities of food from this source.

Yearbook of Fishery Statistics, 1960 (Production and Fishing Craft), vol. XII, 452 pp., illus., processed in English, French, and Spanish, \$4. Food and Agriculture Organization of the United Nations, Rome, Italy, 1961. (Sold in United States by Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.) This edition contains fishery statistics on catches, production of preserved and processed commodities, fishing craft, and whaling from all countries. The total nominal catch of fish, crustaceans, mollusks, and other aquatic animals, residues and aquatic plants, except seals and whales, throughout the world in 1960 is estimated at nearly 38 million metric tons, an increase of 6 percent over the nominal catch of 1959, and is again greater than in any other year. New record levels have been set for the output of fish meals and oils and of frozen and canned products, but the production of dried and salted fish has declined.

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Technical Assistance Program for developing the fisheries of many countries. These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Report on FAO-IPFC Training Centre in Fishery Statistics Held at Bombay, India (February 13-April 30, 1959), by V. G. Panse and K. V. R. Sastry, 157 pp., September 1960.

Report on the Third International Inland Fisheries Training Center, Bogor, Indonesia (October 31-December 10, 1955), by W. H. Schuster, FAO Report No. 489, 38 pp., processed, 1956.

Report to the Government of India on the Pearl and Chank Beds in the Gulf of Mannar, by F. Baschieri-Salvadori, FAO Report No. 1119, 74 pp., illus., May 1960.

The United Arab Republic (Egyptian Region) on the Fishery Investigations on the Nile River, the Lakes and the Pond Farms in Egypt, 1958-59, by Wilhelm F. J. Wunder, FAO Report No. 1243, 35 pp., 1960.

The United Arab Republic (Egypt) on Sample Surveys for Fishery Statistics, by V. G. Panse and K. V. R. Sastry, FAO Report No. 1247, 184 pp., 1960.

La Tunisie sur la Peche en Tunisie (On the Tunisian Fishery), by M. F. Bourgois, FAO Report No. 1283, 59 pp., 1960.

Libya on Fishery Policy and Administration, by John L. Dibbs, FAO Report No. 1289, 16 pp., 1960.

Ghana on Fish Marketing in Ghana, by John L. Dibbs, FAO Report No. 1300, 90 pp., illus., 1961.

Brazil on the Fisheries of the Amazon Region, by Arno Meschkat, FAO Report No. 1305, 101 pp., illus., December 1960.

The Philippines on the Organization and Operation of the Limnology Project, 1959-1960, by J. S. Dendy and F. F. W. Morawa, FAO Report No. 1319, 27 pp., 1961.

(Second), India on the Pearl and Chank Beds in the Gulf of Mannar, by F. Baschieri-Salvadori, FAO Report No. 1323, 14 pp., February 1961.

India on Fishermen's Training Centres, by Rafael Ruppin, FAO Report No. 1328, 20 pp., 1961.

India on the Improvement of Fishing Techniques in Inland Reservoirs of India, by S. B. Gulbadamov, FAO Report No. 1342, 17 pp., illus., 1961.

Burma on the Development of Food Research and Food Industry in Burma, by H. Wittfogel, FAO Report No. 1378, 34 pp., 1961.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Informe sobre el Centro Latinoamericano de Capacitación en Piscicultura y Pesca Continental Desarrollado Bajo los Auspicios del Gobierno de Colombia y de la Organización de las Naciones Unidas para la Agricultura y la Alimentación en Buga (Colombia), 1 Febrero-12 Marzo 1960 (Report on the Latin American Center for Training in Fish Culture and Inland Fisheries Held Under the Auspices of the Government of Colombia and the Food and Agriculture Organization of the United Nations at Buga, Colombia, February 1-March 12, 1960), by John Greenbank, FAO Report No. 1262, 23 pp., 1960.

FOREIGN TRADE:

Licensing and Exchange Controls--Italy, WTIS Part 2, Operations Report No. 61-62, 4 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., September 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

--Sudan, WTIS Part 2, Operations Report No. 61-61, 4 pp., printed, 10 cents.

Market for United States Products in Peru, Supplement No. 1 to Part I of the World Trade Information Service, 62 pp., illus., printed, 40 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This report provides current information of interest to exporters wishing to evaluate the Peruvian market. In Chapter I certain parameters useful in evaluating the scope and nature of the market are discussed. Chapter II deals with the pattern of Peru's trade and the outlook for this market. A detailed analysis of imports by commodity groups is contained in Chapter III. Distribution facilities and services, Government regulations affecting imports, and trade practices are discussed in subsequent chapters of this report.

FRANCE:

"La Communauté Economique Européenne, son Extension et la Peche Maritime" (The European Economic Community, Its Expansion and the Marine Fisheries), by M. Yence, article, *La Peche Maritime*, vol. 40, no. 1002, September 1961, pp. 628-629, illus., printed in French. *La Peche Maritime*, 190, Boulevard Haussman, Paris, France.

"Au Portugal la Peche a la Sardine est Entrée dans une Phase d'Equilibre Economique" (The Sardine Fishery in Portugal Has Entered Upon a Period of Economic Stability), article, *La Peche Maritime*, vol. 40, no. 1002, September 1961, pp. 631-633, illus., printed in French. *La Peche Maritime*, 190, Boulevard Haussman, Paris, France.

"Le Saumon du Pacifique est entré dans l'Atlantique" (Pacific Salmon Has Been Introduced in the Atlantic), article, *La Peche Maritime*, vol. 40, no. 1002, September 1961, pp. 642-644, illus., printed in French. *La Peche Maritime*, 190, Boulevard Haussman, Paris, France.

FREEZE-DRYING:

"Accelerated Freeze-Drying of Foods--Some European Advances," by Ettrup Petersen, article,

Frosted Food Field, vol. 33, no. 3, September 1961, pp. 11-13, 41, illus., printed. *Frosted Food Field*, 321 Broadway, New York 7, N. Y. Discusses the freeze-drying process; equipment used in Denmark and Scotland; physical changes taking place in food during processing; and causes of undesirable effects such as toughness and dryness after rehydration, discoloration, off-flavoring, and vitamin loss. "The accelerated freeze-drying which took 17 years to develop can therefore be considered as one of the most promising developments in food preservation and has certainly come to stay," concludes the author.

"Better 'Economic Picture' is Needed to Spur Freeze-Drying, Quartermaster Conference Hears," article, *Frosted Food Field*, vol. 33, no. 4, October 1961, pp. 40, 42-43, printed. *Frosted Food Field*, 321 Broadway, New York, N. Y.

"Latest in Freeze-Drying," by Frank K. Lawler, article, *Food Engineering*, vol. 33, no. 11, pp. 35-38, illus., printed. *Food Engineering*, Chestnut & 56th Sts., Philadelphia 39, Pa.

"Take a New Look at Freeze-Drying," by A. N. Lederman and F. H. Lindstrom, article, *Food Engineering*, vol. 33, no. 10, October 1961, pp. 41-45, illus., printed. *Food Engineering*, Chestnut & 56th Sts., Philadelphia 39, Pa. Presents figures and facts showing how and why freeze-drying can be economical. According to the authors, "Freeze-drying is not any more expensive than other methods of food preservation. In many instances it's more economical than freezing when considering final distribution or retailing." An illustration of a typical freeze-drying installation shows the simplicity as well as quantity and type of operation that would be required.

FREEZERSHIP:

"Refrigerator-Freezer Vessel Tavria, for Fish," by L. P. Kozyrzhuk and E. G. Iusupov, article, *Sudostroenie*, vol. 27, no. 3, March 1961, pp. 1-5, printed in Russian. *Sudostroyeniye*, Soviet Ministov SSSR, Sudpromgiz, Suvarooski, Leningrad S-15, U.S.S.R.

FRESH-WATER FISH:

"Effectiveness of the Reproduction of Fishes and Distribution of Their Young in Gorkiy Reservoir," by L. K. Il'ina, article, *Trudy Instituta Biologii Vodokhraneniia*, no. 3, 1960, pp. 195-201, printed in Russian. *Institut Biologicheskoi Fiziki Vodokhraneniia*, Akademii Nauk SSSR, Moscow, U.S.S.R.

"Growth and Age of the Bream (*Abramis brama* L.), the White Bream (*Blicca bjoerkna* L.), the Roach (*Rutilus rutilus* L.) and the Zobel (*Abramis sapa* Pall.) in Gorkiy Reservoir," by L. K. Il'ina, article, *Trudy Instituta Biologii Vodokhraneniia*, no. 3, 1960, pp. 202-215, printed in Russian. *Institut Biologicheskoi Fiziki Vodokhraneniia*, Akademii Nauk SSSR, Moscow, U.S.S.R.

GEAR:

"A Mechanical Net-Puller for Skiff Fishing with Gill Nets," by Emil J. Smith, Jr., article, *California Fish and Game*, vol. 47, no. 4, October 1961, pp. 327-333, illus., printed, single copy 75 cents.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

California Department of Fish and Game, Printing Division, Documents Section, Sacramento 14, Calif.

GEORGES BANK:

"The Distribution of Eyed Flounder and Lanternfish Larvae in the Georges Bank Area," by John B. Colton, Jr., article *Copeia*, 1961, no. 3, pp. 274-279, illus., printed. American Society of Ichthyologists and Herpetologists, 18111 Nordhoff St., Northridge, Calif.

GERMAN FEDERAL REPUBLIC:

Basic Law on Foreign Trade and Payments of the Federal Republic of Germany, WTIS Economic Report Part I, No. 61-63, 16 pp., printed, 15 cents. U. S. Department of Commerce, Washington, D. C., August 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A report on the basic law on foreign trade and payments of the German Federal Republic. According to the report, "The basic principles of the law is the provision that exchanges of goods and services, capital transactions, payments and other economic relations between residents of the Federal Republic of Germany and residents of other countries are basically unrestricted... Insofar as it authorizes restrictive measures, the new law is primarily a consolidation of existing laws and regulations on a new foundation of commercial freedom." An unofficial translation of the law is presented in this report together with a table of contents to facilitate its use.

GERMANY:

Experimentelle Versuche über die Entstehung der Dotterblasenwassersucht bei Regenbogenforellen (Experiments on the Origin of Dropsy of the Vitel-line Sac in the Rainbow Trout), by Wolfgang Putsch, 28 pp., illus., printed in German. Universitat Munchen, Amalienstrasse 85, Munchen 13, Germany, 1958.

GREAT LAKES:

"The Identification of Larval Yellow Perch, Perca flavescens, and Walleye, Stizostedion vitreum," by Carroll R. Norden, article *Copeia*, 1961, no. 3, pp. 282-288, illus., printed. American Society of Ichthyologists and Herpetologists, 18111 Nordhoff St., Northridge, Calif.

HERRING:

"On Fecundity and Larval Abundance of Downs Herring," by J. P. Bridger, Fishery Investigations, Series 2, vol. 23, no. 3, 32 pp., illus., printed, 10s. (about US\$1.40). Her Majesty's Stationery Office, Kingsway, London WC2, England.

"Recent Data on the Distribution of the Herring Clupea harengus suworowi Rabinson in the Barents Sea," by I. V. Shutova-Korzh, article, *Doklady Akademii Nauk SSSR*, vol. 137, no. 4, April 1961, pp. 954-956, printed in Russian. *Doklady Akademii Nauk SSSR*, *Podsosenski* per. 21, Moscow B-64, U.S.S.R.

"Smasildundersokelsene i Nord-Norge 1960/61" (Small Herring Investigation in Northern Norway 1960/61), by Olav Dragesund and Per Hognestad,

article, *Fiskets Gang*, vol. 47, no. 36, September 7, 1961, pp. 519-524, illus., printed in Norwegian. *Fiskets Gang*, *Fiskeridirektoratet*, *Radstuplass 10*, *Bergen, Norway*.

IRAQ:

Import Tariff System of Iraq, WTIS Part 2, Operations Report No. 61-60, 2 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., September 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

IRRADIATION:

Radiosterilization of Edible Fish, Mollusks, and Crustaceans (A Literature Search), compiled by Theodore F. Davis, TID-3565, 13 pp., processed, 50 cents. Office of Technical Information, U. S. Atomic Energy Commission, Washington, D. C., August 1961. (For sale by the Office of Technical Services, Department of Commerce, Washington 25, D. C.) Included are 69 selected references to reports and published literature on the feasibility of increasing the storage life of marine foods by irradiation.

ISRAEL:

"Israel Develops Its Fisheries," article, *Gospodarka Ryb*, vol. 7, no. 6, June 1955, pp. 20-21, printed in Polish. *Gospodarka Ryb*, Warsaw, Poland.

ITALY:

Statistica della Pesca e della Caccia, 1960 (Fishing and Hunting Statistics, 1960), 168 pp., illus., printed in Italian. *Istituto Centrale di Statistica*, Rome, Italy, 1960.

JAPAN:

Import Tariff System of Japan, WTIS Part 2, Operations Report No. 61-64, 2 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., September 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

LOBSTER:

"Banding Lobster Claws--A Better Way to Inactivate Them," by D. G. Wilder, article, *Trade News*, vol. 14, no. 3, September 1961, pp. 8-9, illus., printed. Information and Educational Service, Department of Fisheries, Ottawa, Canada.

MADAGASCAR:

"Les Peches Maritimes a Madagascar" (Ocean Fishing off Madagascar), article, *Bulletin d'Information*, no. 2, October 1961, pp. 30-38, processed in French. *Ministere des Travaux Publics des Transports, de la Construction et des Postes et Telecommunications, Tananarive, Republique Malgache*.

NAVIGATION:

"Cromwell Current," by O. I. Mamaev, article, *Priroda*, vol. 50, no. 2, February 1961, pp. 94-96, printed in Russian. *Priroda*, *Akademija Nauk SSSR*, *M. Khariton'yevski* per. 4, Moscow, U.S.S.R.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

NETHERLANDS:

Marking and Labeling Requirements of the Netherlands, WTIS Part 2, Operations Report No. 61-58, 4 pp., printed, 10 cents, September 1961. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A report on the marking and labeling requirements on certain commodities in the Netherlands. This report contains a list of commodities, including fish and shellfish, and the rules and specific regulations pertaining to the marking of individual commodities.

NORWAY:

"Lofotfiskets Lønnsomhet 1961" (Returns from the Lofotey Fishery 1961), article, Fiskets Gang, vol. 47, no. 37, September 14, 1961, pp. 638-643, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Rapport om de Norske Fiskeriundersøkelser ved Vest-Gronland i 1960" (Report on the Norwegian Fishery Investigation off West Greenland in 1960), by Erling Bratberg, article, Fiskets Gang, vol. 47, no. 34, August 24, 1961, pp. 593-597, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Rapport om Tøkt med F/F Johan Hjort til Vest-Gronland i April-Mai 1961" (Report on the Trip of the Johan Hjort to West Greenland, April-May 1961), by Erling Bratberg, article, Fiskets Gang, vol. 47, no. 35, August 31, 1961, pp. 609-610, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

OCEANOGRAPHY:

"El Nino" Study Based on Analysis of Ocean Surface Temperatures 1935-57, by Jacob Bjerknes, Bulletin vol. 5, no. 3, pp. 219-303, printed in English and Spanish. Inter-American Tropical Tuna Commission, c/o Scripps Institution of Oceanography, La Jolla, Calif., 1961.

Oceanografia Rybacka: Przyrodnicze Podstawy Rybołówstwa Morskiego (Fishing Oceanography: the Natural Basis of Sea Fishing), by Kazimierz Demel, 283 pp., illus., printed in Polish. (Napisali Kazimierz Demel (i) Jozef Kulikowski, Państwowe Wydawn. Naukowe, Warsaw, Poland, 1955.

Physical Oceanography, by Albert Defant, vol. 1, 745 pp., and vol. 2, 606 pp., printed, £10 10s. (about US\$29). Pergamon Press, 122 E. 55th St., New York 22, N. Y.

"Possibility of Theoretical Calculation of the Vertical Temperature Profile in the Surface Layer of the Sea," by S. A. Kitaygorodskii, article, Izvestia Akademii Nauk SSSR Seria Geofizicheskaya, no. 3, March 1961, pp. 487-494, printed in Russian. Izvestia Akademii Nauk SSSR Seria Geofizicheskaya, Moscow, U.S.S.R.

"Use of Aerial Photographic Surveying in Studying Surface Currents of the Sea," by Iu. D. Sharikov and I. A. Cherkasov, article, Meteorologiya i

Gidrologiya, no. 3, March 1961, pp. 46-48, printed in Russian. Meteorologiya i Gidrologiya, Moscow, U.S.S.R.

OYSTERS:

"Oyster Conditions in 1961... An Unusual Year," by Lyle St. Amant, article, Louisiana Conservationist, vol. 13, no. 11, November 1961, pp. 10-11, illus., printed. Louisiana Conservationist, Wild Life & Fisheries Bldg., 400 Royal St., New Orleans 16, La. The author states that "It became evident after considering temperatures and salinities during 1961 that an unusual year has occurred in the normal environment of all of the animals using the shallow bays of the Louisiana coast. Just how much this change has affected the animals is difficult to say with limited data and because other unknown factors may be playing a part in over-all production. Nevertheless, it is certain that these conditions did play a part and possibly a large part in causing the low shrimp production for 1961, and it certainly will affect, to a considerable extent, oyster conditions. Fortunately, in the case of oysters, any adverse effects of 1961 may be more than offset by beneficial effects on the over-all oyster industry." The author points out some expected effects of 1961 ecological conditions on oysters, and discusses oyster breeding and setting, growth and mortality, predation, and disease. He concludes that "if fall and winter conditions return to normal and afford good fattening and growth of planted seed, and if the set in 1961 is not too light to furnish adequate seed in 1962, then 1961 can be looked upon as generally beneficial to the oyster industry."

"The Principles of Water Sterilisation by Ultra-Violet Light, and Their Application in the Purification of Oysters," by P. C. Wood, Fishery Investigations Series 2, vol. 23, no. 6, 52 pp., illus., printed, £1 (about US\$2.81). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England.

Progress in Rehabilitating Disease Affected Oyster Stocks, by R. E. Drinnan and J. C. Medcof, General Series Circular No. 34, 3 pp., printed. Fisheries Research Board of Canada, Biological Station, St. Andrews, N. B., Canada, October 1961.

The Purification of Oysters in Installations Using Ultra-Violet Light, Laboratory Leaflet No. 27, printed. Fisheries Laboratory, Burnham, England, August 1961.

Scottish Oyster Investigations, 1946-1958, by R. H. Millar, Marine Research No. 3, 76 pp., illus., printed, £1 2s. 6d. (about US\$3.15). Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland, 1961. Discusses studies made by the Scottish Marine Biological Association of the European flat oyster, Ostrea edulis L. A brief history of the Scottish oyster fishery is given. Evidence shows that oysters were formerly common in many places around the coast. They are now more scarce in most localities than formerly and have disappeared entirely from other areas. Overfishing has probably been the main cause of the decline or local extermination of stocks. Loch Ryan is, however, a favorable site for reviving a profitable fishery, according

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

to the author, and recommendations are made toward this goal. Field experiments on growing and fattening transplanted oysters are described. Studies on breeding in two brackish water lakes are also described.

PACIFIC OCEAN:

"Characteristics of Geographical Zones in the Central Part of the Pacific Ocean," by V. G. Bogorov, article, *Trudy Okeanograficheskoi Komissii*, vol. 10, no. 4, 1960, pp. 3-7, printed in Russian. *Trudy Okeanograficheskoi Komissii, Akademii Nauk SSSR, Moscow, U.S.S.R.*

PARASITES:

"Effect of *Dactylogyrus vasator* Nybelin, 1924 (Monogeneida, *Dactylogyridae*) on the Organism of Carp," by A. V. Uspenskaiia, article, *Zoologicheski Zhurnal*, vol. 40, no. 1, January 1961, pp. 7-12, printed in Russian with English summary. *Redaktsia Zoologicheskogo Zhurnala, Podoseneskii per. d. 21, Moscow B-64, U.S.S.R.*

PERU:

La Pesca Peruana en 1960 (The Peruvian Fishery in 1960), by Javier Iparraguirre Cortez, 31 pp., illus., printed in Spanish. *Servicio de Pesqueria, Ministerio de Agricultura, Lima, Peru.*

PLANKTON:

An Enlarged Clark-Bumpus Plankton Sampler, by Robert G. Paquette, Eugene L. Scott, and Paul N. Sund, Contribution No. 244, 4 pp., illus., printed. (Reprinted from Limnology and Oceanography, vol. 6, no. 2, pp. 230-233, April 1961.) Department of Oceanography, University of Washington, Seattle, Wash.

"High-Speed Plankton Net," by V. A. Iashnov, article, *Zoologicheski Zhurnal*, vol. 40, no. 1, January 1961, pp. 122-128, printed in Russian with English Summary. *Redaktsia Zoologicheskogo Zhurnala, Podoseneskii per. d. 21, Moscow B-64, U.S.S.R.*

POISONOUS FISH:

"Fish Poisoning in the Tropical Pacific," by A. H. Banner, article, *South Pacific Bulletin*, vol. 11, no. 4, pp. 18-21, 85, illus., printed. *South Pacific Commission, Box 5254, G. P. O., Sydney Australia.*

POLAND:

Gospodarstwo Rybackie w Zbiornikach Zaporowych (Zaryz Projektowania) (Fishery Management in Basins Formed by Dams (Outline for Planning)), by T. Backiel, J. Kossakowski, and A. Rudnicki, 74 pp., illus., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 71-B-1, pp. 65-138, 1958.) *Instytut Rybactwa Srodladowego, Warsaw, Poland.*

Powod, Transport i Przetrzymywanie Tarlakow Lososow i Troci w Dolnej Wisle na te Sposoby z Dotychczasowych Akcji (Toward the Proper Methods of Catching Salmon and Sea Trout Spawners in the Lower Vistula, Their Transportation and Keeping), by Roman Schoenennett and Zygmunt Gesicki, 11 pp., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 73-B-

B-2, pp. 269-279, 1958.) *Instytut Rybactwa Srodladowego, Warsaw, Poland.*

"Problems Connected with the Development of the Fishing Economy in the 5-Year Plan," by Z. Grzywaczewski, article, *Bud Okretowa Warszawa*, vol. 6, no. 3, March 1961, pp. 79-80, printed in Polish. *Bud Okretowa Warszawa, Warsaw, Poland.*

Przepławki Komorowe--Biologiczno-Rybackie Zasady Projektowania (Pool Passes--Biological Foundations for Planning), by Stanislaw Sakowicz and Stanislaw Zarnecki, article, *Roczniki Nauk Rolniczych*, no. 69, series D, 1954, 183 pp., printed in Polish with summary in English. *Instytut Rybactwa Srodladowego, Warsaw, Poland.*

Resorbcja i Znaki Tarlowe Lusek Troci (SALMO TRUTTA L.) z Wod Polski (Resorption and Spawning Marks in the Scales of *Salmo trutta* L. in Polish Waters), by Tadeusz Backiel and Roman Sych, 40 pp., illus., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 73-B-2, pp. 119-158, 1958.) *Instytut Rybactwa Srodladowego, Warsaw, Poland.*

"A Sketch of the Development and Activities of the Maritime Institute in the Years 1950-1960," by P. Slomianko, article, *Gospodarka Wodna*, vol. 20, no. 11, November 1960, pp. 490-491, printed in Polish. *Gospodarka Wodna, Czackiego 3/5, Warsaw, Poland.*

Stosunki Narybkowe w Płytkich Srodowiskach Srodkowej Wisły (Fry Relations in Shallow Sections of the Middle Vistula River), by Tadeusz Backiel, 50 pp., illus., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 73-B-2, pp. 313-362, 1958.) *Instytut Rybactwa Srodladowego, Warsaw, Poland.*

Wzrost i Zroznicowanie Dlugosci w Populacjach Narybku Karpowatych (The Growth and Differentiation of Length in Cyprinid Fry Populations), by Tadeusz Backiel and Stanislaw Bontemps, 36 pp., illus., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 73-B-2, pp. 363-398, 1958.) *Instytut Rybactwa Srodladowego, Warsaw, Poland.*

Zagadnienia Rybackie Przy Obudowie Potokow Gorskich (Stream Regulation in Relation to Fisheries), by Stanislaw Sakowicz and Stanislaw Zarnecki, 42 pp., illus., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 57, pp. 337-378, 1958.) *Instytut Rybactwa Srodladowego, Warsaw, Poland.*

Zapobieganie i Zwalczanie Plesni u Tarlakow Troci i Lososow Przy Pomocy Kapieli w Roztwórze Zieleni Malachitowej (Combating Fungus in Sea Trout and Salmon Spawners by Means of Bathing in a Solution of Malachite Green), by Stanislaw Sakowicz and Stanislaw Gottwald, 11 pp., illus., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 73-B-2, pp. 283-293, 1958.) *Instytut Rybactwa Srodladowego, Warsaw, Poland.*

Zarybianie Lososiami i Trociami w Gornej Czesci Systemu Rzecznego Wisly w Latach 1879-1954

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

(Stocking of the Upper Vistula River System with Salmon and Sea Trout Over the Period 1879-1954), by Wladyslaw Kolder, 63 pp., illus., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 73-B-2, pp. 215-267, 1958.) Instytut Rybactwa Środowiskowego, Warsaw, Poland.

POLLUTION:

"Pollution of Coastal Areas of the Sea and Measures for Sanitary Protection," by K. B. Khait, article, *Gigiena i Sanitariia*, vol. 25, no. 6, June 1960, pp. 9-15, printed in Russian with English summary. *Gigiena i Sanitariia*, Min. Zdravookhraneniia SSSR, Moscow, U.S.S.R.

Proceedings, The National Conference on Water Pollution, FS 2, 64/3:P94/960, 607 pp., illus., printed, \$2.25. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., 1961. Presents the official proceedings of the National Conference on Water Pollution, held in Washington, D. C., December 12-14, 1960. In addition to the reports and discussions on the seriousness of the pollution of the Nation's water courses and the many problems to which this pollution gives rise, this report also presents the recommendations of the Conference for the control of the problem.

PRESERVATION:

Manufacturing Industries, 1959-60--Meat and Fish Preserving, by S. R. Carver, no. 23, 9 pp., processed, Commonwealth Bureau of Census and Statistics, Canberra, Australia. Contains, among others, tables showing Australia's fish and shellfish pack and imports and exports of fish and shellfish.

PURSE SEINING:

New Methods of Purse Seining for Tuna in the Eastern Pacific Ocean, by Gordon C. Broadhead and Arthur R. Marshall, 7 pp., illus., printed. (Reprinted from *Proceedings of the Gulf and Caribbean Fisheries Institute, Thirteenth Annual Session*, pp. 67-73, Nov. 1960.) Gulf and Caribbean Fisheries Institute, 1 Rickenbacker Causeway, Virginia Key, Miami, Fla.

RADIOACTIVITY:

"Radioactive Isotopes and Ionizing Radiations in Marine Biology," by G. G. Polikarpov, article, *Trudy Sevastopol'skai Biologicheskai Stantsii*, vol. 13, 1960, pp. 275-292, printed in Russian. *Trudy Sevastopol'skai Biologicheskai Stantsii*, Akademii Nauk SSSR, Leningrad, U.S.S.R.

SALMON:

Age of Pink Salmon and the Pattern of Their Fluctuations in Abundance, by A. P. Vedenskii, 114 pp., processed, \$1.25. (Translated from Russian, *Izvestiya Tikhookeanskogo Nauchno-Issledovatel'skogo Instituta Rybnogo Khozyaistva i Okeanografii*, vol. 41, pp. 111-195, 1954.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

"The Fecundity of Atlantic Salmon (*Salmo salar* Linn.)" by J. A. Pope, D. H. Mills, and W. M. Shearer, Freshwater and Salmon Fisheries Research 26, 12 pp., illus., printed, 4s. (56 U. S.

cents). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England.

"Functional Morphology of the Hypothalamic-Hypophyseal Neurosecretory System in Salmonid Fishes at Different Stages of Their Life Cycle," by L. A. Barannikova, article, *Doklady Akademii Nauk SSSR*, vol. 136, no. 3, January 1961, pp. 730-733, printed in Russian. *Doklady Akademii Nauk SSSR*, Podolsenski per. 21, Moscow B-64, U.S.S.R.

"History of Yearling King Salmon Marked and Released at Nimbus Hatchery," by George H. Warner, Donald H. Fry, Jr., and A. Nelson Culver, article, *California Fish and Game*, vol. 47, no. 4, October 1961, pp. 343-355, printed, single copy 75 cents. California Department of Fish and Game, Printing Division, Documents Section, Sacramento 14, Calif.

"The Nez Perce Dam and the Value of a Fishery," by W. R. D. Sewell and M. E. Marts, article, *Land Economics*, vol. 37, no. 3, August 1961, pp. 257-260, printed, \$2. Land Economics, Sterling Hall, University of Wisconsin, Madison 6, Wis. Discusses the economic value of the salmon resources of the Columbia River basin versus the importance of its water power potential. Presents details of the Nez Perce and High Mountain Sheep cases.

(State of Maine) Biennial Report of Atlantic Sea Run Salmon Commission (for Period July 1, 1958-June 30, 1960), 14 pp., illus., printed. Atlantic Sea Run Salmon Commission, Fisheries Bldg., University of Maine, Orono, Me.

SARDINES:

"Distribution and Behavior of Sardines (*Sardinella aurita*) at the Coast of West Africa Depending on Oceanographic Conditions," by A. N. Probatov, article, *Trudy Okeanograficheskoi Komissii*, vol. 10, no. 4, 1960, pp. 68-70, printed in Russian. *Trudy Okeanograficheskoi Komissii*, Akademii Nauk SSSR, Moscow, U.S.S.R.

SEA BREAM:

"Growth of the Sea Bream *Diplodus annularis* (L.) in the Black and Adriatic Seas," by L. P. Salekhova, article, *Trudy Sevastopol'skai Biologicheskai Stantsii*, no. 13, 1960, pp. 163-185, printed in Russian. *Trudy Sevastopol'skai Biologicheskai Stantsii*, Akademii Nauk SSSR, Leningrad, U.S.S.R.

SEALS:

"Autumn and Early Winter Distribution of the Baikal Seal," by V. D. Pastukhov, article, *Izvestia Sibirskie Otdelenie*, no. 2, 1961, pp. 108-115, printed in Russian. *Izvestia Sibirskie Otdelenie*, Akademii Nauk SSSR, Novosibirsk, U. S. S. R.

SENEGAL:

"La Peche Maritime au Senegal" (Marine Fisheries of Senegal), by H. Lovat, article, *La Peche Maritime*, vol. 40, no. 1003, October 1961, pp. 697-703, illus., printed in French. *La Peche Maritime*, 190, Boulevard Haussman, Paris, France.

SHAD:

"A New (Estuarine) Form of Shad of the Dnieper River and Some Problems in the Taxonomy of Shads

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

of the Black Sea and the Sea of Azov," by V. I. Vladimirov, article, *Zoologicheski Zhurnal*, vol. 40, no. 4, April 1961, pp. 547-555, printed in Russian with English summary. *Redaktsiia Zoologicheskogo Zhurnala, Podosenskii per. d.21, Moscow B-64, U.S.S.R.*

SHRIMP:

Synoptic Rationale of Existing Florida Shrimp Regulations, by Robert M. Ingle, Contribution No. 48, 6 pp., printed. (Reprinted from *Proceedings of the Gulf and Caribbean Fisheries Institute, Thirteenth Annual Session, November 1960*, pp. 22-27.) *Florida State Board of Conservation, Tallahassee, Fla.*

SMALL BUSINESS MANAGEMENT:

Business Life Insurance, Management Aids for Small Manufacturers No. 130, 4 pp., processed. *Small Business Administration, Washington 25, D. C., October 1961.* Business life insurance is life insurance used to protect a business, or the family of a businessman, from the financial loss which results from the death of someone associated with the business. There is no basic difference between business life insurance and the life insurance used for personal and family needs. But the protection set up by a business firm does involve many more complex details to meet legal, financial, tax and technical problems. This report lists the numerous specific purposes for which business life insurance is written, and describes the steps to be taken in the establishment of business life insurance plan.

Direct Mail Advertising for Small Retailers, by R. M. Lovejoy, Small Marketers Aid No. 72, 4 pp., processed. *Small Business Administration, Washington 25, D. C., September 1961.* Direct mail advertising is similar to other advertising with some distinctive characteristics which can be extremely valuable to small marketers. This report discusses the types of direct mail advertising, dangers to avoid, and various steps to help in writing attractive advertisements.

Personal Factors in Choosing a Site for the Small Manufacturing Plant, by Zenon S. Malinowski and William N. Kinnard, Jr., Management Research Summary, 4 pp., processed. *Small Business Administration, Washington 25, D. C.* The study reported in this summary was undertaken (1) to help the owner-managers of small manufacturing firms recognize and understand the role of both economic and noneconomic factors in the choice of a plant site, and (2) to provide community leaders with information that might prove useful in creating an atmosphere attractive to new small industry. It was concluded that personal considerations play an important part in plant-location decisions, especially in the choice of general area and town or community. In considering a new location, the small manufacturer must distinguish carefully between economic and personal noneconomic factors in order to guard against any tendency to rationalize his personal bias into economic justification.

Selecting a Site for the Small Manufacturing Plant, by James H. Thompson, Management Research Summary, 4 pp., processed. *Small Business Administration, Washington 25, D. C.* A summary

of a report on selecting a site for the small manufacturing plant. One of the most common mistakes in the selection of a plant location, according to the report, is insufficient preliminary planning. The research reported in the summary was undertaken to meet the need of small manufacturers for a guide to plant-location methods. The conclusions are based primarily on interviews with 38 firms with a record of successful site selection.

SOUTH ATLANTIC OCEAN:

"Notes on the Fishing Effort Along Parts of the Occidental Shelf of the South Atlantic Ocean," by M. P. Paiva, article, *Boletim de la Sociedade Cearense de la Agronomia*, vol. I, 1960, pp. 179-186, printed in Portuguese. *Boletim de la Sociedade Cearense de la Agronomia, Fortaleza, Ceara, Brazil.*

SPINY LOBSTERS:

"Exploracao da Lagosta no Ceara" (Spiny Lobster Exploration in Ceara), by M. P. Paiva, article Mundo Agrario, vol. 7, no. 97, 1959, p. 17, printed in Portuguese. *Mundo Agrario, Rio de Janeiro, Brazil.*

"Perspectivas da Exploracao Lagosteira no Rio Grande do Norte" (Review of Spiny Lobster Exploration in Rio Grande do Norte), by M. P. Paiva, article, Mundo Agrario, vol. 8, no. 101, 1959, p. 20, illus., printed in Portuguese. *Mundo Agrario, Rio de Janeiro, Brazil.*

"On the Spiny Lobster Fishing in Ceara," by M. P. Paiva, article, Boletim Antropologia, vol. 2, no. 1, 1958, pp. 63-70, illus., printed in Portuguese. *Associacao Brasileira de Antropologia, Rua da Matriz 92, Botafogo, Rio de Janeiro, Brazil.*

SPRAT:

"Age Variations in the Morphology of Sprat (*Sprattus sprattus phalericus Risso*) in the Black Sea and Their Functional Significance," by N. Ia. Lipskaia, article, *Trudy Sevastopol'skaiia Biologicheskaiia Stantsiiia*, no. 13, 1960, pp. 180-184, printed in Russian. *Trudy Sevastopol'skaiia Biologicheskaiia Stantsiiia, Akademiiia Nauk SSSR, Leningrad, U.S.S.R.*

"Diurnal and Seasonal Variations in the Feeding of Sprat (*Sprattus sprattus phalericus Risso*) in the Black Sea," by N. Ia. Lipskaia, article, *Trudy Sevastopol'skaiia Biologicheskaiia Stantsiiia*, no. 13, 1960, pp. 190-203, printed in Russian. *Trudy Sevastopol'skaiia Biologicheskaiia Stantsiiia, Akademiiia Nauk SSSR, Leningrad, U.S.S.R.*

STARFISH:

"Enigma of an Echinoderm," by Allison L. Burnett, article, Natural History, vol. 70, no. 9, November 1961, pp. 10-19, illus., printed. *The American Museum of Natural History, Central Park West at 79th St., New York 24, N. Y.* Discusses the complex anatomy of the starfish. Much of the starfish's biology remains a scientific mystery.

STURGEON:

Beluga Chernogo Moria (Beluga of the Black Sea), by A. I. Ambro, Uchenye Zapiski, vol. 56, 199 pp., printed in Russian. *Kishinev Universitet, Kishinev, U.S.S.R.*

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

SWORDFISH:

"Scientists Study the Swordfish," by G. J. Gillespie, article, *Trade News*, vol. 14, no. 3, September 1961, pp. 3-7, illus., printed. Information and Educational Service, Department of Fisheries, Ottawa, Canada. The spectacular growth of the swordfish industry in Nova Scotia--the only province in the Canadian Maritimes where swordfish are hunted--has encouraged further study of the biology and ecology of the swordfish. This article describes some of the work which has been done in this field of research, and discusses the distribution of the swordfish, its behavior, and living habits. The history of fishing for swordfish in the northwest Atlantic is also discussed.

TARIFFS:

Import Tariff System of Paraguay, WTIS Part 2, Operations Report No. 61-63, 2 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., September 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

Tariff Classification Study: Alphabetical Index of Commodities Provided for in the Proposed Revised Tariff Schedules of the United States, May 20, 1961, Miscellaneous Series TC, 130 pp., processed, 65 cents. United States Tariff Commission, Washington, D. C., 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This volume contains an alphabetical index of commodities (including fish, shellfish, and fishing equipment) provided for in the "Proposed Revised Tariff Schedules of the United States." The index has been prepared to facilitate reference to the proposed tariff schedules.

TOXICITY:

"Toxicity of Different Poisons Used in Antifouling Paints," by M. A. Dolgopol'skaya and E. S. Gurevich, article, *Trudy Sevastopol'skaiia Biologicheskaiia Stantsii*, no. 13, 1960, pp. 315-325, printed in Russian. *Trudy Sevastopol'skaiia Biologicheskaiia Stantsii*, Akademiia Nauk SSSR, Leningrad, U.S.S.R.

TRADE LISTS:

The Bureau of International-Business Operations, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$1 a copy.

Canneries and Frozen Foods--Producers and Exporters--Guatemala, 2 pp. (October 1961). Includes the name and address of one firm in Guatemala which processes and exports frozen shrimp to the United States. The exporting firm reports an average production of about 80,000 pounds of shrimp a month. In 1960 exports of frozen shrimp were valued at \$159,000.

Canneries--Republic of South Africa, 9 pp. (September 1961). Lists the names and addresses, size of firms, and types of products (including fish and shellfish) handled by each firm.

Canneries and Frozen Foods--Producers and Exporters--Turkey, 4 pp. (August 1961). Lists the names and addresses, size of firms, and types of

products handled by each firm. Includes producers and exporters of canned fish and frozen fish.

TRAPS:

"Trapping Devices as Basic Equipment for Catching First-Class Fish," by W. Korzynek, article *Gospodarka Ryb*, vol. 7, no. 6, June 1955, pp. 18-19, printed in Polish. *Gospodarka Ryb*, Warsaw, Poland.

TRAWLERS:

"The Case for the Stern Ramp," by C. Birkhoff, article, *World Fishing*, vol. 10, no. 10, October 1961, 28-29, 35, illus., printed, 3s, (about 42 U. S. cents). John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London NW1, England. Discusses the pros and cons of current trends in the gear-hauling arrangements of stern trawlers.

"Trawlers Will Come from the Atlantic Ocean," by V. A. Eroshchev-Shak, article, *Doklady Akademii Nauk SSSR*, vol. 137, no. 4, April 1961, pp. 951-953, printed in Russian. *Doklady Akademii Nauk SSSR*, Podsolenski per. 21, Moscow B-64, U.S.S.R.

TROUT:

An Evaluation of Stocking Hatchery-Reared Steelhead Rainbow Trout (SALMO GARDNERII GARDNERII) in the Sacramento River System, by Richard J. Hallock, William F. Van Woert, and Leo Shapovalov, Fish Bulletin No. 114, 75 pp., illus., printed, California Department of Fish and Game, 987 Jedsmith Dr., Sacramento 19, Calif.

Polowy Troci (SALMO TRUTTA L.) w Zatoce Gdanskiej i w Systemie Rzecznym Wisly (Catches of Sea Trout (*Salmo trutta L.*) in the Danzig Bay and in the Vistula River System), by Jan Jokiel and Tadeusz Backiel, 16 pp., illus., printed in Polish with summary in English. (Reprinted from *Roczniki Nauk Rolniczych*, no. 75-B-2, pp. 213-222, 1960.) *Institytut Rybactwa Srodladowego*, Warsaw, Poland.

Some Environmental Relations of the Speckled Trout (SALVELINUS FONTINALIS), by F. E. J. Fry, 29 pp., processed. (Reprinted from the *Proceedings of the N. E. Atlantic Fisheries Conference*, May 1951.) Ontario Fisheries Research Laboratory, Department of Zoology, University of Toronto, Toronto, Ontario, Canada.

TUNA:

"A Method of Predicting Tuna Catch by Using Coastal Sea-Surface Temperatures," by Frank J. Hester, article, *California Fish and Game*, vol. 47, no. 4, October 1961, pp. 313-326, illus., printed, single copy 75 cents. California Department of Fish and Game, Printing Division, Documents Section, Sacramento 14, Calif. This study attempts to relate fluctuations in the temperate tuna catch (bluefin and albacore) to environmental conditions as measured by sea-surface temperatures at two shore stations in southern California. In summary, the author states that "(1) Tuna landings from southern California waters fluctuate from year to year both in quantity and area of capture; (2) A correlation has been shown between sea-surface temperature--July, August, and September mean--at two southern California shore stations and bluefin and albacore catch from selected areas; (3) This correlation holds when winter water temperatures are used permitting a forecast of blue-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

fin and albacore catch before the season begins; (4) Equations have been given for predicting any year's bluefin and albacore catch in selected areas and limits of confidence are set; and (5) Landings from the selected areas have been compared with total California landings."

"Notas Biologicas sobre os Atuns" (Biological Notes on Tunas), by M. P. Paiva, article, Mundo Agrario, vol. 7, no. 99, 1959, p. 37, printed in Portuguese. Mundo Agrario, Rio de Janeiro, Brazil.

Tuna Oceanography Programs in the Tropical Central and Eastern Pacific, by Milner B. Schaefer, 4 pp., printed. (Reprinted from California Cooperative Oceanic Fisheries Investigations, vol. 8, pp. 41-44, Jan. 1961.) California Department of Fish and Game, 722 Capitol Ave., Sacramento, Calif.

"La Peche du Thon a la Seine Tournante aux Etats-Unis" (The Purse-Seine Tuna Fishery in the United States), by Michel Angot, article, La Peche Maritime, vol. 40, no. 1003, October 1961, pp. 704-715, illus., printed in French. La Peche Maritime, 190 Boulevard Haussmann, Paris, France.

"Ships for Tuna Fishing," by J. Forembski and B. Pradzynski, article, Bud Okretowe Warszawa, vol. 6, no. 3, March 1961, pp. 90-92, printed in Polish. Bud Okretowe Warszawa, Warsaw, Poland.

TURKEY:

Balik ve Balikcilik (Fish and Fishery), vol. 9, no. 7, September-October 1961, 32 pp., illus., printed in Turkish with English table of contents. Balik ve Balikcilik, Balikciliik Mudurlugu, Besiktas, Istanbul, Turkey. Includes the following articles: "The General Conditions of the Black Sea Fishery," by Sebahattin Sehri; "Turkish Lakes in Respect of Fishery," by M. Ilham Artuz, and "Blue Fish," by Siti Uner.

TURTLES:

"La Tortuga Verde o 'Jaco'" (The Green Turtle or "Jaco"), by Federico Gomez de la Maza, article, Mar y Pesca, vol. 4, nos. 3-4, January-February 1961, pp. 8-10, 56, illus., printed in Spanish, 20 centavos (20 U. S. cents). Departamento de Pesca Edificio I.N.R.A., Onceno Piso, Plaza Civica, Havana, Cuba.

ULTRASONIC DETECTION:

"Application and Principle of the Work of Ultrasonic Detection in Oceanographic and Biological Research," by S. Alfrevic, article, Morsko Ribarstvo, vol. 12, no. 10, October 1960, pp. 159-163, printed in Serbo-Croatian. Morsko Ribarstvo, Association of Marine Fisheries in Yugoslavia, 3 V. Bagota, Rijeka, Yugoslavia,

UNITED STATES PORTS:

Distances between United States Ports, Third (July 1, 1961) Edition, 43 pp., printed, 25 cents. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., 1961. This report is a by-product of the United States Coast Pilots and assembles under one cover the distance tables computed for the eight books. Each distance is by shortest route that safe navigation permits between the two ports concerned.

U. S. S. R.:

Acclimatization of Fish and Food Organisms in Seas of U. S. S. R., by A. F. Karpevich and others, OTS:61-23555, 227 pp., illus., printed. (Xerox reproduction, \$15.50, for sale by Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.)

K. Biologii Lobana u Beregov Gruzii (Biology of the Striped Mullet Along the Georgian Coast), by D. Kh. Meskhidze, 82 pp., printed in Russian. Gosplanie Izdatel'stvo, Batumi, U. S. S. R., 1960.

Iz Istorii Nauchno-Promyslovykh Ikhtiolicheskikh Issledovanii na Morskikh i Presnykh Vododemakh SSSR (From the History of Scientific-Ichthyological Fishery Research in the Seas and Fresh-Water Bodies of the U. S. S. R.), by P. G. Borisov, 196 pp., printed in Russian. "Vysshaya Shkola," Gosplanie Izdatel'stvo, Moscow, U. S. S. R., 1960.

Shortcomings in the Fish Industry of the Kaliningrad-skii Sovnarkhoz, by I. G. Shapiro, JPRS 9712, 8 pp., processed. (Translated from Russian Rybnoe Khoziastvo, no. 2, 1961, pp. 73-77.) Photocopies of this report may be purchased from: Photoduplication Service, Library of Congress, Washington 25, D. C.

VESSELS:

"Experience in Fishing Boatbuilding Applicable to the IPFC Region," by Jan-Olaf Traung, article, IPFC Current Affairs Bulletin, no. 30, April 1961, pp. 1-30, illus., printed. Indo-Pacific Fisheries Council, Food and Agriculture Organization of the United Nations, Bangkok, Thailand. Discusses the application of naval architecture to small fishing boat construction. Since the layout of a boat, general arrangement of the wheelhouse and engine, fuel tanks and fish hold, depend on the actual fishing method, suggestions are made regarding trawlers, long-liners, purse seiners, and gill-nets. Mechanization of fishing gear is as important as motorization of the craft, according to the author. On small open boats, ice boxes appear to be an economical method of stowing the catch. With modern improvements, small steel boats have been found to be cheaper than wooden ones in many parts of the world. When ordering a boat, a buyer should consider the following--fishing conditions, operational information, economic factors, and construction considerations. The importance of drawings is stressed and suggestions as to boat design are given.

"Marine Fouling," by N. I. Tarasov, article, Zoologicheski Zhurnal, vol. 40, no. 4, April 1961, pp. 477-489, printed in Russian with English summary. Re-daktsiya Zoologicheskogo Zhurnala, Podsolenskii per. d.21, Moscow B-64, U. S. S. R.

VIETNAM:

A Check List of Fishes of Vietnam, by Katsuzo Kuronuma, 74 pp., printed. Division of Agriculture and Natural Resources, United States Operations Mission to Vietnam, Saigon, Vietnam, January 1961. Listed are 807 fish species in 411 genera and 139 families with their scientific classification, and where known, their Vietnamese, Japanese, and English names. Provides a handy reference to aid in the study of fish fauna of Vietnam, and also a means to identify the species of fish which are known only by local Vietnamese names.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

WALRUS:

"Among the Walruses," by V. M. Bel'kovich and A. V. Iablokov, article, *Priroda*, vol. 50, no. 3, March 1961, pp. 50-56, printed in Russian. *Priroda*, Akademiya Nauk SSR, M. Khariton'yevski per.4, Moscow, U. S. S. R.

WEST AFRICA:

"The Organization of Fishing in the Waters of West Africa," by Z. Czerminski, article, *Zycie Gospodarcze*, vol. 16, no. 15, April 1961, p. 6, printed in Polish. *Zycie Gospodarcze*, Warsaw, Poland.

WHALING:

"Industria Baleeira nos Acores e Madeira Determinantes do seu Progresso" (Trends in the Whaling Industry of the Azores and Madeira), by Joao Burnay Carvalhais, article, *Boletim da Pesca*, vol. 13, no. 72, pp. 13-24, printed in Portuguese. *Boletim da Pesca*, Gabinete de Estudos das Pescas, 644 R. S. Bento, Lisbon, Portugal.

"Whaling Operations in the Antarctic in the Season 1960/61," article, *Norsk Hvalfangst-Tidende* (Norwegian Whaling Gazette), vol. 50, no. 9, September 1961, pp. 355-372, 375-376, 379, illus., printed in Norwegian and English. *Norsk Hvalfangst-Tidende*, Sandefjord, Norway. A survey of the whaling operations in the Antarctic in the season 1960/61 prepared for and submitted at the meeting of the International Whaling Commission in London in June 1961. It covers the most important regulations in the International Whaling Convention for the countries operating in the Antarctic in the 1960/61 season; the number of factoryships and catching boats engaged in pelagic whaling since the 1945/46 season, and their average gross tonnage; and the periods of operation for the various groups of expeditions. Includes statistical data on the catch and oil production of the individual expeditions, and other data on pelagic whaling in the Antarctic in the 1960/61 season.

WOLFFISH:

"Dates of the Change of Teeth in Atlantic Wolf Fishes (Anarhichadidae)," by V. V. Barsukov, article, *Zoologicheski Zhurnal*, vol. 40, no. 3, March 1961, pp. 462-465, printed in Russian with English summary. *Redaktsiya Zoologicheskogo Zhurnala*, Podsolenskii per.d.21, Moscow B-64, U. S. S. R.

YUGOSLAVIA:

"Development of Fisheries at Losinj Island, from Their Beginning to the Present Time," by N. Pincic, article, *Morsko Ribarstvo*, vol. 12, no. 10, October 1960, p. 166, printed in Serbo-Croatian. *Morsko Ribarstvo*, Association of Marine Fisheries in Yugoslavia, 3 V. Bagota, Rijeka, Yugoslavia.

"Development of the Yugoslav Shellfish Fisheries," by V. Krizanic, article, *Morsko Ribarstvo*, vol. 12, no. 10, October 1960, pp. 155-156, printed in Serbo-Croatian. *Morsko Ribarstvo*, Association of Marine Fisheries of Yugoslavia, 3 V. Bagota, Rijeka, Yugoslavia.

"Fisheries of Zadar," by J. Basioli, article, *Morsko Ribarstvo*, vol. 12, no. 10, October 1960, pp. 164-166, printed in Serbo-Croatian. *Morsko Ribarstvo*, Association of Marine Fisheries in Yugoslavia, 3 V. Bagota, Rijeka, Yugoslavia.

"Problems of Sea Fisheries," by M. Maric, article, *Nova Trgovina*, vol. 14, no. 1, January 1961, pp. 26-28, printed in Serbo-Croatian. *Nova Trgovina*, Belgrade, Yugoslavia.

"Study of the Improvement of Fishery Cadres," by I. Blagalic, article, *Morsko Ribarstvo*, vol. 12, No. 10, October 1960, pp. 156-157, printed in Serbo-Croatian. *Morsko Ribarstvo*, Association of Marine Fisheries Yugoslavia, 3 V. Bagota, Rijeka, Yugoslavia.



HOW FISH ARE SMOKED

The smoking process of fish involves the combination of salting and drying, and the characteristic smoke flavor depends upon the degree to which either of these processes is used. Smoking is employed largely for the preservation of herrings, but whiting, cod, king, haddock, catfish, and mackerel are also preserved in this manner. Both hot and cold curing are used. Of the two the hot smoking process imparts better preservative qualities. The type of wood used for the hot smoke is of special importance. Hard woods with less oil and resins which might taint the fish are preferred. (*Sea Secrets*, The Marine Laboratory, University of Miami, Coral Gables, Fla.)

TANGY SEAFOOD CANAPES



1 cup flaked or canned fish, crab meat,
lobster meat, or shrimp
3 tablespoons mayonnaise or salad
dressing

1 tablespoon finely chopped celery
 $\frac{1}{2}$ cup butter or margarine
3 tablespoons horse-radish
32 toast points
Chopped parsley

Drain canned fish or remove any shell or cartilage from shellfish. Combine mayonnaise, celery, and fish; blend into a paste. Combine butter and horse-radish. Spread horse-radish butter on toast points. Top with fish mixture. Garnish with parsley sprinkled over the top. Makes about 32 canapes.

